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ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR 1991

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE

COMMITTEE ON APPROPRIATIONS
HOUSE OF REPRESENTATIVES

ONE HUNDRED FIRST CONGRESS

SECOND SESSION

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

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Staff Assistants

PART 8

(Pages 1551–3092)

TESTIMONY OF MEMBERS OF CONGRESS AND OTHER INTERESTED INDIVIDUALS AND ORGANIZATIONS

Printed for the use of the Committee on Appropriations

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ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR 1991

TESTIMONY OF MEMBERS OF CONGRESS AND OTHER INTERESTED INDIVIDUALS AND ORGANIZATIONS

THURSDAY, MARCH 29, 1990.

ARMY CORPS OF ENGINEERS PROJECTS IN NEW JERSEY

WITNESS

HON. FRANK PALLONE, JR., A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW JERSEY

Mr. BEVILL. Congressman Pallone, our good friend is now here. We will hear from you, Frank.

Mr. PALLONE. Thank you, Mr. Chairman.

I am going to summarize my statement, if I could.

Mr. BEVILL. Yes. That is good, and your full statement will be made part of the record.

Mr. PALLONE. My district relies very heavily, Mr. Chairman and Members of the committee, on the Army Corps' programs for improving navigation, flood control, and also shoreline protection.

I want to initially mention, the need to improve the competitiveness of the Federal pay scale for engineers and other professional staffers in the Army Corps.

I have found over the last 18 months or so, since I was elected to Congress, that many of the contracts for dredging projects, for shore protection, for other activities, are on hold because of staff shortages, and it is also a major problem in terms of environmental protection of our wetlands. A lot of times there isn't really adequate enforcement of wetlands permits that are permitted by the Corps of Engineers, because there isn't the staff to go around and do that enforcement.

I think that this is causing a problem, not only in New Jersey, but probably in other parts of the country as well.

In addition, I want to just go through a number of projects that are included in the fiscal year 1991 budget that are very important to my congressional district, and let me just say again that you have been extremely helpful with regard to funding for these projects. A lot of them were begun by Congressman Howard, my predecessor.

The most important is the ongoing beach erosion control project from Sandy Hook to Barnegat. In this year's project, there is $21 million to continue construction of that beach erosion project. The State of New Jersey has already begun to construct the seawall, which is the initial State match for the Federal dollars that are going to be used for the project.

The second item is operations and maintenance dredging of the Shrewsbury River. Last year the subcommittee was kind enough to include an additional $1.05 million in the budget for dredging of the Shrewsbury River. This is really the principal navigational area or basin for most of my congressional district.

We are told now that the total cost to complete that dredging is over $2 million, and so I am asking that an additional $1 million be included to complete this project.

I know sometimes it is said, these projets can be done over a couple of years rather than all at once, but the bottom line is that the most cost efficient to do the work while the equipment is in there this year, rather than to have to do it over a two-year period. So, that is one request that I have for additional funds.

The third item relates to the Intracoastal Waterway. The administration has recommended $2.5 million for dredging of the Intracoastal Waterway throughout the State. I am not asking for additional money this year for that, but I did notice that we have actually done a number of surveys in conjunction with the Corps. We have found that a good portion of the Intracoastal Waterway which is in my district, has never been dredged and is not on board this year to be dredged. So I just want to mention that we are going to try to get some of that dredging done with the money that is proposed for this year, but we probably will be coming back the next fiscal year to ask for additional funds for that.

The last project I wanted to mention relates to pollution control measures at Deal Lake in Monmouth County. This is a lake that under the EPA, has been awarded a grant for restoration efforts, but we would like to get it included under the Army Corps Lakes Program authorized in section 602 of the Water Resources Development Act. And at this time, a commitment of $475,000 is needed to continue work on a storm water runoff as part of the Deal Lake Commission's pollution control measures.

As I am sure the committee Members know, non-point pollution is getting to be a more significant problem every day, and this would be an opportunity to use an Army Corps grant to show what type of work can be done to limit non-point-source pollution.

Again, I just want to thank the Chairman and Members of the committee for having been very cooperative in the past on all of these projects.

[The statement of Mr. Pallone follows:]

STATEMENT OF REPRESENTATIVE FRANK PALLONE, JR.

BEFORE THE
COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

MARCH 29, 1990

Mr. Chairman, thank you for the opportunity to present testimony before your Subcommittee on the United States Army Corps of Engineers' Budget Request for Fiscal Year 1991. This past year, my first in Congress, I have worked closely with the New York and Philadelphia Districts and am highly impressed by their dedication and responsiveness.

My District relies heavily on the Corps' programs for improving navigation, flood control and shoreline protection. I want to mention beforehand that the New York District and I have been working with the Office of Personnel Management on a plan to improve the competitiveness of the federal pay scale for engineers and other professional staff.

I recognize that the pay issue is a government-wide problem, but it is particularily bad in New York where there is stiff competition from State and local government agencies offering better pay and benefits. This is a problem in my Congressional District where contracts are delayed and projects are on hold because of staff shortages. It is also a major problem in terms of environmental protection of our wetlands. Poor staff for enforcement has led to non-permitted dredging and subsequently the unnecessary loss and inadequate mitigation of wetlands.

Your support for this aspect of the Army Corps' operations is important as government addresses reforms in the federal pay scale.

page two

The following are projects included in the Fiscal Year 1991 budget which are vitally important to my Congressional District:

1) The ongoing Beach Erosion Control Project, Sandy Hook to Barnegat.

2) Operations and Maintenance Dredging at the Intercoastal Waterway and at waterways in Monmouth County, New Jersey and the dedication of additional funds to continue dredging of the Shrewsbury River.

3) Pollution Control Measures at Deal Lake, Monmouth County.

The President's FY-1990 Budget includes $29 million to continue construction on the Beach Erosion Control Project, Sandy Hook to Barnegat. This amount represents the federal cost share to fully replenish the beaches at Sea Bright and Monmouth Beach, New Jersey.

The State of New Jersey has already begun its $12.1 million dollar project to reconstruct the seawall offering the only protection on this narrowing spit of land between the Atlantic Ocean and the Navesink River. I am pleased that the Administration recognizes New Jersey's critical shore protection needs and is supportive of this project on a long-term basis.

Last year, this Committee was compelled by many Members who showed support for the continuation of maintenance dredging at channels with low volumes of commerce or "recreational" areas. My District is appreciative of your response and the addition of $1.050,000 dollars in the FY-91 budget for dredging of the Shrewsbury River.

The Shrewsbury and its adjoining Navesink or north branch is a major waterway used by more than 25 marinas, boat repairs shops, in addition to hundreds of privately owned slips. The Coast Guard and the Army Corps have worked out a major plan for dredging this waterway in its entirety working out many safety concerns due to poor design and frequent shoaling.

This waterway has not been completely dredged since the early part of the 70's. The total cost for complete dredging is over $2.0 million. While the New York District Corps had prepared to use money reprogrammed from other projects to fully fund this work, the New York office can no longer assure me that these funds will be available. It is my request that this Subcommittee include an additional $1.0 million dollars to complete this entire project.

I believe that it is most cost efficient to do this work during FY-91 while equipment is already in place for dredging here and the plans and specifications indicate a plan for complete dredging. Beyond the funding issue, the Corps and the State of New Jersey and my office have been working to coordinate permits for dredging of privately owned portions of the river. This project has become a major federal, state and local cooperative and your support for this thoughtful planning at these levels is really very important.

The Administration has recommended $2,529,000 for dredging of the Intracoastal Waterway throughout the State. I support funding for this purpose but want to mention a problem in my district which affects the use of the entire waterway. In portions of Ocean County, New Jersey the Corps has dredged the Intracoastal at only 6 feet instead of the authorized 12 feet.

Boaters who desire to use the Intracoastal are forced to bypass this area and travel the open sea due to rapid shoaling. It is really unfair to boaters that the whole of the Intracoastal is not traversable. I am working now with the Philadelphia District and the New Jersey Marine Trades Association to identify these areas and hopefully work out this problem. Your recognition of our efforts and future support for funding this work would be appreciated.

The other projects included in the FY-91 budget for Operations and Maintenance Dredging are at Manasquan River, Shark River, Sandy Hook Bay and Sandy Hook Bay at Leonardo. All of these projects have been of priority and I am happy to see them included in this budget request.

My third interest is funding to restore Deal Lake in Monmouth County. This project is part of the Corps' Lakes Program authorized in Section 602 of the Water Resources Development Act of 1986. The intensive restoration needs of this lake were brought to my attention by a group of local citizens who formed the Deal Lake Commission.

The Environmental Protection Agency awarded a grant to the State for $604,000 for restoration efforts. Since 1983, the State of New Jersey has contributed approximately $1.3 million and the local municipalities have contributed an average of $8,000 annually. While these figures represent an impressive commitment by the federal, State and local governments, a staggering $6.0 million is needed to completely restore the ecological system of the lake.

At this time, a commitment of $475,000 is needed to continue work on a storm water run-off as part of the Deal Lake Commision's pollution control measures from non-point sources. Your support for funding this aspect of the Deal Lake project would be of great assistance.

Thank you for your time. I'd be happy to address any questions that the Committee may have regarding my statement.

Mr. BEVILL. You raised some interesting points about the shortages in personnel.

I wish you would write me a letter on that, and I will get you a response to it.

Mr. PALLONE. I will, absolutely.

THURSDAY, MARCH 29, 1990.

DELAWARE RIVER AND TRIBUTARIES

WITNESSES

HON. JIM SAXTON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW JERSEY

PAUL LANE IVES, JR., CHAIRMAN, JOINT EXECUTIVE COMMITTEE AND PRESIDENT, PILOTS' ASSOCIATION FOR THE BY AND RIVER DELAWARE

WILLIAM A. HARRISON, SECRETARY-TREASURER, JOINT EXECUTIVE COMMITTEE FOR IMPROVEMENT AND DEVELOPMENT OF THE PHILADELPHIA PORT AREA

LEWIS CACCESE, CONSULTANT, JOINT EXECUTIVE COMMITTEE

ALAN J. WOOD, ASSISTANT DIRECTOR, WORLD TRADE DIVISION DELAWARE RIVER PORT AUTHORITY

WILLIAM McLAUGHLIN, DIRECTOR, CORPORATE COMMUNICATIONS, PHILADELPHIA PORT CORP.

JOSEPH GROSSI, EXECUTIVE DIRECTOR, MARITIME ADVISORY COUNCIL OF NEW JERSEY

JOSEPH A. BALZANO, EXECUTIVE DIRECTOR, SOUTH JERSEY PORT CORP.

JOHN DOHERTY, DEPUTY DIRECTOR, PORT OF WILMINGTON

GEORGE E. DUFFY, PRESIDENT, NAVIOS AGENCIES, INC.

JOHN BURKHARDT, REPRESENTATIVE, PORT ADVISORY COMMITTEE, PENJERDEL COUNCIL

HAROLD ELLWANGER, MANAGER, SHIP OPERATIONS, SUN TRANSPORT CO.

Mr. BEVILL. Next we have our colleague, Congressman Jim Saxton. I know you need to get back to your work, so we will be glad to hear from you now.

Mr. SAXTON. Mr. Chairman, thank you; and I know your time is precious, as well, so I am just really here to introduce this next panel of witnesses for you.

A very important panel, I might add, for the Delaware Valley area. The group is known as the Joint Executive Committee for the improvement and development of the Philadelphia Port area.

It's an organization that is over 100 years old, and in fact, this year it will be 102 years old. And it was organized for the purpose of promoting economic activity in shipping and importing, in particular, in the Delaware Valley area.

We are here today to make a request for a relatively small amount of money, which will pay relatively large dividends, large dividends to the Delaware Valley area, large dividends to the economy of Delaware, New Jersey, and Pennsylvania, and large dividends to the Federal Treasury as well.

This year the Port of Philadelphia produced $441,000,000 in Federal—to the Federal Government in customs receipts alone. That is to say nothing of the spinoff in terms of income taxes and other revenues derived from the roughly $2 billion worth of economic activity the Delaware Port from Philadelphia, Camden and Delaware Port, produce.

So we are here today to request a relatively small amount of funding for a project that will enhance that type of economic activity and perhaps presumably make it grow to the benefit of the area as well as to the benefit of the Federal Treasury.

So with that I would like to introduce the gentleman who is going to be the spokesman or at least one of the spokesmen, Bill Harrison, the Secretary Treasurer of the Joint Economic Committee.

Thank you, Mr. Chairman.

Mr. BEVILL. Mr. Harrison, the Chair recognizes you.

And as Jim knows, we are using a credit card all the time. so well be glad to hear about the federal revenue you all generate

Mr. HARRISON. A tall order, but we can deliver.

Mr. Chairman, Mrs. Boggs and Mr. Myers, we are delighted to have the opportunity to be here again, and we do appreciate also the consideration that this body has given to us in the past.

I will be brief and will summarize our remarks.

Mr. BEVILL. Very good. Your prepared statement will be in the record.

[The information follows:]

JOINT EXECUTIVE COMMITTEE
FOR THE
IMPROVEMENT and DEVELOPMENT of the PHILADELPHIA PORT AREA

ORGANIZED OCTOBER 17, 1888

913 LAFAYETTE BUILDING
PHILADELPHIA, PA 19106
(215) 925-1522

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H. WILLIS JACKSON
HARRY G. SCHAD

WITNESS LIST

UNITED STATES HOUSE OF REPRESENTATIVES ENERGY
AND WATER DEVELOPMENT SUBCOMMITTEE ON APPROPRIATIONS

ROOM 2362, RAYBURN BUILDING
MARCH 29, 1990

Paul Lane Ives, Jr., Chairman, Joint Executive Committee and President, Pilots' Association for the Bay and River Delaware (Group Spokesman)

William A. Harrison, Secretary-Treasurer, Joint Executive Committee and President of the Ports of Philadelphia Maritime Exchange

Lewis Caccese, Consultant, Joint Executive Committee

Alan J. Wood, Assistant Director, World Trade Division Delaware River Port Authority

William McLaughlin, Director, Corporate Communications, Philadelphia Port Corporation

Joseph Grossi, Executive Director, Maritime Advisory Council of New Jersey

Joseph A. Balzano, Executive Director, South Jersey Port Corporation

John Doherty, Deputy Director, Port of Wilmington

George E. Duffy, President, Navios Agencies, Inc.

John Burkhardt, Representative, Port Advisory Committee, PENJERDEL Council

Harold Ellwanger, Manager, Ship Operations, Sun Transport Co.

MEMBERS

Delaware County Chamber of Commerce
Delaware Valley Regional Planning Commission
Division of Port Operations, City of Philadelphia
Greater Philadelphia Chamber of Commerce
International Longshoremen's Association
Mariners' Advisory Committee
  for the Bay & River Delaware
Northeast Philadelphia Chamber of Commerce
PENJERDEL Council

Philadelphia Board of Realtors
Philadelphia Customs Brokers &
  Freight Forwarders Association
Philadelphia Marine Trade Association
Philadelphia Port Corporation
Pilots' Association for the Bay & River Delaware
Port of Philadelphia Marine Terminal Association
Port of Wilmington

Port of Wilmington Maritime Society
Ports of Philadelphia Maritime Exchange
Ports of Philadelphia Maritime Society
South Jersey Port Corporation
Traffic Club of Philadelphia
Vessel Owners' & Captains' Association
Womens International Trade Association
World Trade Association of Philadelphia, Inc.
World Trade Div., Delaware River Port Authority

JOINT EXECUTIVE COMMITTEE
FOR THE
IMPROVEMENT and DEVELOPMENT of the PHILADELPHIA PORT AREA

ORGANIZED OCTOBER 17, 1886

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Honorary Chairmen:
H. WILLIS JACKSON
HARRY G. SCHAD

Testimony of Paul Lane Ives, Jr., Chairman, Joint Executive Committee for the Improvement and Development of the Philadelphia Port Area; Conveying Request for Civil Functions Appropriations for the U.S. Army Corps of Engineers' Philadelphia District, for Fiscal Year 1991. Presented March 29, 1990 before the United States House of Representatives Energy and Water Development Subcommittee on Appropriations, Room 2362, Rayburn Building, Washington, D.C.

MEMBERS

Delaware County Chamber of Commerce
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IMPROVEMENT and DEVELOPMENT of the PHILADELPHIA PORT AREA

ORGANIZED OCTOBER 17, 1888

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PHILADELPHIA, PA 19106
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Honorary Chairmen:
H. WILLIS JACKSON
HARRY G. SCHAD

IDENTIFYING REMARKS

The Joint Executive Committee for the Improvement and Development of the Philadelphia Port Area is port-affairs spokesman for twenty-four Delaware Valley civic and trade associations whose names appear at the bottom of this letterhead page. Organized in 1888, this Committee has participated in and promoted all major navigation improvements to the Delaware, Schuylkill and Christina Rivers and to the Chesapeake and Delaware Canal. The members pay no dues beyond the nominal amounts needed to cover the organization's administrative expenses, and its officers serve without compensation.

Our Delaware River marine terminals in Camden, Gloucester, Pettys Island, Morrisville, Philadelphia, Chester and Wilmington; located in three states and identified collectively as the Ports of Philadelphia; handled approximately 70,000,000 tons of international cargo during calendar year 1989. This commerce generated more than two billion dollars into the economy of the tri-state Delaware Valley region.

Seven major oil refineries; the largest refinery complex on the east coast, plus one of the nation's largest steel mills are located along the Delaware River. In addition to the strong support these facilities lend to the economy and to national defense, the Philadelphia Naval Base is strategically located at the confluence of the Delaware and Schuylkill Rivers. In 1989 waterborne commerce in the Ports of Philadelphia produced approximately $441 million for the Federal Government in Customs Receipts. For these reasons we solicit your support for our important and necessary navigation projects.

SUMMARY

The Joint Executive Committee recognizes the need for fiscal restraint and supports the Corps in its drive to obtain economies in its navigation programs. However, the following projects, essential to the forward growth of this port and the resulting benefits which are generated into the economy of the Delaware Valley have either not been funded or funded to levels inadequate to achieve the goals. Accordingly, we urge that the additional sums, consistent with the reported capability of the Corps' Philadelphia District, be added to the Budget.

PROJECT	FY '91 BUDGET	ADDITIONAL AMOUNT REQUIRED
O & M, Delaware River, Philadelphia to the Sea	$11,410,000	$2,625,000
PD, Delaware River Comprehensive Navigation		1,000,000
Construction, Delaware River, Vicinity of Camden (Beckett Street)		3,290,000
TOTAL ADDITIONAL AMOUNT REQUIRED		$6,915,000

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South Jersey Port Corporation
Traffic Club of Philadelphia
Vessel Owners' & Captains' Association
Womens International Trade Association
World Trade Association of Philadelphia, Inc
World Trade Div., Delaware River Port Authority

TESTIMONY

The Joint Executive Committee appreciates the support of the Congress and the Corps of Engineers in maintaining the navigation arteries which sustain the economic vitality of our tri-state region. Reliable data reveals our Ports' activities along the Delaware River generates nearly $2 billion into the economy of the tri-state Delaware Valley region and directly accounts for 100,000 jobs.

The items of our particular interest in the President's Budget which we specifically support, subject to increases as hereinafter described, are:

Operations and Maintenance

Delaware River, Philadelphia to Sea	$11,410,000
Delaware River, Philadelphia to Trenton	3,280,000
Schuylkill River	1,400,000
Wilmington Harbor	3,164,000
Chesapeake and Delaware Canal	15,177,000

Planning, Engineering and Design (PED)

Delaware River, Philadelphia to Trenton, Tioga Marine Terminal (PED)	$ 100,000
Salem River (PED)	150,000
Chesapeake and Delaware Canal	550,000

The proposed improvements at Tioga Marine Terminal and at Salem River have been found worthy of improvement and final design is appropriate. There is an urgent need to define further the justifiable improvements in the Chesapeake and Delaware Canal to maximize the benefit of this waterway to accommodate the modern large vessels and accordingly we support this budgeted amount.

However, we must point out that the Delaware River Projects principally carry bulk cargoes which depend upon adequate Project depths. The $11,410,000 in the President's Budget represents an approximate $2,000,000 reduction from the FY 90 level for this line item and with no allowance made for increasing costs. This reduction will result in a decrease in dredging with the consequence of a reduction in vessels' draft. This will impose light loading, greater shipping costs and an increase in lightering on the users of this waterway. The increase in lightering of oil is of particular concern since any additional oil handling increases the opportunity for oil spills. We urge that $2,625,000 be added to the Philadelphia to Sea O. & M. Project as additional capability so that project depths will continue to be maintained in the Delaware River. This will represent increasing the appropriation for operation and maintenance of the Delaware River, Philadelphia to the Sea project from $11,410,000 to $14,035,000.

The Joint Executive Committee also points out that the President's Budget does not provide Planning, Engineering and Design funds for the proposed 45-foot channel in the Project Delaware River, Philadelphia to the Sea. This proposed channel deepening has benefits which will exceed costs. The benefits will accrue on over 60,000,000 tons of bulk cargo which is carried on the Delaware River annually. This deeper channel will also reduce the amount of oil now lightered in Delaware Bay due to inadequate channel depths. The reduction in lightering is a reduction in oil transfer in the Delaware Bay which better insures against oil spills. The proposed improvement will also be a boon to the bulk export cargo of scrap iron and coal from Philadelphia.

Local interests are convinced of the merits of this project and the Delaware River Port Authority has identified themselves as the sponsor for cost sharing. Failure to provide funds for design in FY 91 causes a delay of a year in realizing benefits. In view of this, the add-on of $1,000,000 for Planning, Engineering and Design is merited.

Construction General

Delaware River - Vicinity of Camden (Beckett Street)

This is a request for $3,290,000 of Construction funds which are not now in the President's Budget. This project has been authorized and pre-planning and design for this project will be completed in FY 90. Construction of this project can be undertaken and completed in FY 91 if the Federal share of construction funds are provided. Delay in construction funding merely delays receipt of the benefits which this project will provide. The entire Federal cost of this project is $3,500,000.

The importance of this project to our region is attested by the fact that the current 37' project depth was a result of one of the earliest cost sharing projects in this nation. However, the 37' depth which was completed in 1988 continues as a limitation in obtaining the further economic benefits from deeper draft vessels. Early completion of the 40' depth will provide immediate benefits. The principal export commodities are scrap iron and coal to destinations such as Korea, Turkey and other ports which can receive vessels up to and over 40' draft. Completion of this project will immediately permit vessels which now leave with 37' draft for distant ports to be loaded to 40'. This argues for prompt initiation of construction of the 40' project so that the economic benefits can be achieved and that much needed export tonnage can be increased. Local interests have agreed to provide the required cost sharing for the 40' project as has been done for the recently completed 37' project.

Mr. Harrison. Getting into what we consider the meat of what we are about here, on the operations and maintenance side, Philadelphia of the Sea, we note that $11,410,000 has been appropriated in the budget. But this represents a $2,000,000 reduction over the fiscal year 1990 budget, and this gives us some concern.

The reduction will result in a decrease in dredging with the consequence of a reduction in vessels' draft as we see it.

This will impose greater shipping costs on the users of this waterway. The increase in lightering of oil is of particular concern since any additional oil handling increases the possibility for oil spills.

We urge, therefore, that $2,625,000 be added to the Philadelphia to the Sea O&M Project. This is consistent, by the way, with the capability of the Philadelphia District.

We also should like to point out that the President's budget does not provide planning, engineering and design funds for the proposed four foot channel in the project Delaware River Philadelphia to the Sea. This, it has already been determined, the proposed channel deepening has benefits which will exceed costs.

The benefits will accrue on over 60,000,000 tons of bulk cargo, which is carried on the Delaware River annually. This deeper channel will also reduce the amount of oil now lightered in the Delaware Bay to inadequate channel depths.

The reduction in lightering is a reduction in oil transfer in the Delaware Bay, which better ensures against oil spills.

The proposed improvement will also be a boom to the bulk export cargo of scrap iron and coal from Philadelphia. Local interests are convinced of the merits of this project, and the Delaware River Port Authority has identified themselves as the sponsor for cost sharing.

Failure to provide funds for design in fiscal year 1991 causes a delay of a year in realizing benefits.

In view of this, the add-on of $1,000,000 for planning, engineering and design is warranted in our view. The final project that we are seeking funding for, sir, is the Delaware River vicinity of Camden under construction in general.

This is a request for $3,290,000 in construction funds, which are not now in the President's budget.

This project has been authorized in preplanning, and design for this project will be completed in fiscal year 1990. Construction of this project can be undertaken and completed in fiscal year 1991, if the Federal share of construction funds are approved.

Delay in construction funding merely delays receipt of the benefits which this project will provide.

The entire Federal cost of this project is $3,500,000. The importance of this project to our region is attested by the fact that the current 37-foot project depth was a result of one of the earliest cost-sharing projects in the Nation.

However, the 37-foot depth which was completed in 1988 continues as an invitation for further economic benefits from deeper draft vessels.

Early completion will provide immediate benefits. The principal export commodities are scrap iron and coal to designations which can receive vessels up to and over 40-foot drafts.

We urge the prompt initiation of the construction of a 40-foot project so that the economic benefits can be achieved and that much needed export tonnage can be increased.

Local interests have agreed to provide the required cost-sharing for the 40-foot project, as has been done for the recently completed 37-foot project.

I did not initially introduce our group, sir. If I could have that opportunity, I would appreciate doing that.

On my far right is Mr. John Doherty, Assistant Port Director for the Port of Wilmington.

Next to him is Mr. John Burkhardt, who is representative for the PENJERDEL Council.

And on my far left is Mr. Alan Wood, Assistant Director of World Trade Division of Delaware River Port Authority.

And then next to me is Mr. William McLaughlin, the Communications Director for the Philadelphia Port Corporation.

Mr. BEVILL. We are pleased to have each of you. We will certainly work with you, and I hope that we can comply with your request.

Mr. SAXTON. Put very simply, the channel from the mouth of the Delaware Bay to Philadelphia and north of Philadelphia reported feet and depth, many of the ships that come in stop just inside the Cape May/Lewis opening to the Bay, and offload cargo from one ship to another ship with less draft.

And it's obviously a very cumbersome way for us to produce a good flow shipping up and down the river, so we would really appreciate your consideration of this matter.

Mr. BEVILL. It is also very expensive.

Mr. SAXTON. That is right.

Mr. BEVILL. Thank you.

THURSDAY, MARCH 29, 1990.

NEW YORK AND NEW JERSEY PORT ISSUES

WITNESSES

LILLIAN LIBURDI, DIRECTOR, PORT AUTHORITY OF NEW YORK AND NEW JERSEY

JOSEPH GROSSI, EXECUTIVE DIRECTOR, NEW JERSEY DEPARTMENT OF COMMERCE

PATRICIA ZEDALIS, DEPUTY COMMISSIONER, NEW YORK CITY DEPARTMENT OF PORTS AND TRADE

Mr. BEVILL. Next we have the Port Authority of New York and New Jersey, Ms. Liburdi.

Ms. LIBURDI. Thank you, Mr. Chairman.

I am delighted to be able to rejoin you again this year to be able to testify on behalf of the Port Authority of New York and New Jersey.

I am Lillian Liburdi, the Director; and joining me today are Mr. Joseph Grossi, the Executive Director of the New Jersey Department of Commerce; and Ms. Patricia Zedalis, Deputy Commissioner of New York City Department of Ports and Trade.

We would like to thank you, Mr. Chairman, and Members of the committee for giving us the opportunity today to make our funding needs known to you.

Our complete statement has been submitted for the record, and we hope that it contains information that you will find useful in your deliberations.

Also, Mr. Chairman, we appreciate the support that you have provided to us in the past, and we hope we continue to merit that support.

I would like to briefly discuss a couple of projects with you. First, the Kill Van Kull and Newark Bay Channel Harbor deepening project for which the Port Authority is providing local cooperation and the $51,000,000 local share.

With the deepening of the channels from 35 to 40 feet, more than half completed, the Corps is now entering a very critical phase of construction consisting largely of rock removal through blasting.

Problems concerning construction costs, vessel movement and safety have compelled the Corps to proceed slowly. In particular, problems concerning the durability of construction equipment to remove rock in the Kill Van Kull may have resulted in significant increases in the cost of proposed contracts.

To minimize these cost increases to attract more bidders, the contract durations have been lengthened for construction.

The Administration's request contains $31,000,000 in fiscal year 1991. The construction will be intensive, but will have to proceed cautiously in order to maintain vessel safety, of paramount concern to us in the busiest channel of our port.

Therefore, we support the Corps' request; and, of course, we will expect to be back next year talking about the later phases of this program.

Under the category of Operations and Maintenance, the Administration has requested $21,391,000 for 28 navigation projects within the Port of New York and New Jersey. Since our complex channel system is essential to the productivity and efficiency of the port, we appreciate this support which keeps our waterways open for commercial navigation.

And as a parenthesis, I would like to tell you that I am pleased to be able to say our foreign ocean board and general cargo trade in 1989 did increase over declines in 1987 and 1988.

Our volume rose almost 10 percent or about 1.2 million tons to 13.25 million tons of general cargo. That was the third highest volume in our port's history, exceeded only in 1985 and 1986.

We are also pleased to say, as our colleagues in the Port of Philadelphia could say to you, that we are a significant contributor to the Federal Treasury, in that we, as the New York Customs District, generated at least a quarter of the amount that Customs raised in 1989, about $4.1 billion.

We also represent an industry that is worth about $16 billion to our region, or fully 3 percent of the gross regional product.

Mr. Chairman, I would like to turn the microphone, if I may, over to Mr. Grossi; but before I do, I would like to invite you and the Members of the committee back to see our harbor and to see the improvements we have made in the past with your help.

[The statement of Lillian C. Liburdi follows:]

JOINT STATEMENT
LILLIAN C. LIBURDI, DIRECTOR, PORT DEPARTMENT
THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY
THE HONORABLE GEORGE R. ZOFFINGER, COMMISSIONER OF
COMMERCE, ENERGY AND ECONOMIC DEVELOPMENT
THE STATE OF NEW JERSEY
AND
THE HONORABLE ANTHONY M. RICCIO, JR.
COMMISSIONER OF PORTS AND TRADE
THE CITY OF NEW YORK

ON BEHALF OF APPROPRIATIONS IN FISCAL YEAR 1991
FOR FEDERAL CHANNEL & RELATED DEVELOPMENT IN THE PORT OF NEW YORK & NEW JERSEY
PRESENTED TO THE SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
HOUSE AND SENATE COMMITTEES ON APPROPRIATIONS
CONGRESS OF THE UNITED STATES
WASHINGTON, D.C.

MARCH 29, 1990

Endorsed By

Bayonne Chamber of Commerce (NJ)
Board of Commissioners of Pilotage of the State of New Jersey
Brooklyn Chamber of Commerce (NY)
Chamber of Commerce of the Borough of Queens (NY)
City of Newark, Department of Engineering (NJ)
Commerce and Industry Association of New Jersey
Downtown Brooklyn Development Association
Hudson County Chamber of Commerce and Industry (NJ)
International Longshoreman's Association
Local 333 - United Marine Division
Maritime Advisory Council of New Jersey
Maritime Association of the Port of New York and New Jersey
Maritime Port Council of Greater New York and Vicinity
Metro Newark Chamber of Commerce (NJ)
New Jersey Alliance for Action
New Jersey Citizens Transportation Council
New Jersey State Chamber of Commerce
New York Board of Trade
New York Chamber of Commerce and Industry
New York-New Jersey Port Promotion Association
New York Shipping Association, Inc.
Save Our Port
Staten Island Chamber of Commerce (NY)
Towboat and Harbor Carriers Association of New York and New Jersey
Union County Chamber of Commerce (NJ)
Union County Planning Board (NJ)
United New Jersey Sandy Hook Pilots Benevolent Association
United New York Sandy Hook Pilots Benevolent Association

I am Lillian C. Liburdi, Director, Port Department of The Port Authority of New York and New Jersey. Joining me are George R. Zoffinger, Commissioner of Commerce, Energy and Economic Development, the State of New Jersey and Anthony M. Riccio, Jr., Commissioner of Ports and Trade, the City of New York. We speak on behalf of the 28 civil, trade, labor and governmental interests listed on the cover of our statement in urging that sufficient Federal funds be appropriated in Fiscal Year 1991 for the design, construction and maintenance of essential navigation projects in the Port of New York and New Jersey under the U.S. Army, Corps of Engineers' Civil Works program. We thank you, Mr. Chairman, and members of the subcommittee for affording us time to make our funding needs known to you.

As has been the case in recent years, our modest request for funds for the Port of New York and New Jersey is made in the shadow of continuing Federal budget deficits. When we ask for sums beyond what is provided in the budget it is not a casual request. We scale down our view of all that we would like to see done in the port to a modest, practical level that is consistent with fiscal reality. The recommended funding levels contained herein constitute the basic minimum which is needed for the Port of New York and New Jersey. A summary of our recommendations follows:

	Budget Recommendation	Port Recommendation	Difference
CONSTRUCTION			
Kill Van Kull and Newark Bay Channels, NY & NJ	$31,000,000	$31,000,000	None
New York Harbor Collection and Removal of Drift, NY & NJ	Zero	2,000,000	$2,000,000
STUDY			
New York Harbor and Adjacent Channels (Claremont Channel), NJ	Zero	500,000	500,000
New York Harbor and Adjacent Channels (Port Jersey Channel), NJ	Zero	Zero	
Red Hook Flats Anchorage, NY	Zero	250,000	250,000
OPERATION & MAINTENANCE			
28 Navigation projects as contained in the Budget	21,391,000	21,391,000	None
TOTALS	$52,391,000	$55,141,000	$2,750,000

KILL VAN KULL AND NEWARK BAY CHANNELS, NY & NJ

The Kill Van Kull and Newark Bay Channels, NY & NJ is a harbor deepening project authorized for construction in the Fiscal Year 1985 Supplemental Appropriations Act (Public Law 99-88) and The Water Resources Development Act of 1986 (Public Law 99-662). The Port Authority is providing local cooperation and the $51 million non-Federal cost for this project.

With the deepening of the channels from 35 feet to 40 feet more than half complete, the Corps of Engineers is now entering a critical phase of construction consisting largely of rock removal through blasting. Unforeseen but not insurmountable problems concerning construction costs, vessel movements and safety have compelled the Corps to proceed slowly. In particular, problems concerning the availability of construction equipment or the lack thereof to remove rock in the Kill Van Kull may have resulted in significant increases in the cost of the proposed contracts. To minimize these cost increases and attract more bidders, contract durations have been lengthened for construction. The Federal Budget contains $31 million in Fiscal Year 1991. The construction will be intensive but will have to proceed cautiously in order to maintain vessel safety, our paramount concern, in this busiest channel of our Port. We support the Corps' request of $31 million.

OPERATION & MAINTENANCE

Under the category of Operation and Maintenance, the Federal Budget is recommending $21.391 million for 28 navigation project within the Port of New York and New Jersey. We appreciate this support which keeps our waterways open to commercial navigation. I am happy to report that our foreign oceanborne general cargo trade in 1989 rebounded significantly from the depressed level of 1988. Our volume rose 9.8% or almost 1.2 million tons for a total trade of more than 13,250,000 tons. This was the third highest level of general cargo in the history of the Port of New York and New Jersey, exceeded only by 1985 and 1986 trade. General cargo exports alone surged more than 31% compared to 1988. Our complex channel system is essential to the productivity of the port and the Operation and Maintenance program recommended by the President for FY91 is necessary to our continued efficiency. We wholeheartedly support this budget recommendation.

The remainder of our presentation will be provided by Commissioners Zoffinger and Riccio.

* * * * * *

Thank you, Mrs. Liburdi. Mr. Chairman and distinguished members of the Subcommittee, I am George R. Zoffinger, Commissioner of New Jersey's Department of Commerce, Energy and Economic Development. In that capacity, I also serve as Honorary Chairman of the Department's Maritime Advisory Council. The Council was established to emphasize New Jersey's position as a maritime state and to support Federal river and harbor projects of benefit to our regional economy.

NEW YORK HARBOR AND ADJACENT CHANNELS (PORT JERSEY CHANNEL), NJ

The Port Jersey Channel in Bayonne, New Jersey presently serves 13 shipping lines at the Global Marine Container Terminal. In 1989, this facility handled 296 vessel arrivals with over 250,000 twenty-foot unit containers. More than 400 terminal employees with an annual payroll of over $21 million, as well as another 110 contract workers, depend on this facility for their livelihood. As a privately owned terminal, Global pays more than $1.2 million in local real estate taxes annually. In addition, the channel also provides access for the U.S. Army Military Ocean Terminal and the newly constructed Port Authority Auto Marine Terminal. This improvement was authorized for construction by the Water Resources Development Act of 1986.

While no funds are contained in the proposed Federal Fiscal Year 1991 Budget for this project, money appropriated in FY90 is scheduled to complete the preconstruction engineering and design phase by late FY91. As a new construction start is expected shortly thereafter, local interests anticipate future appropriations and are very actively involved in identifying a funding source for the non-Federal share of this project.

NEW YORK HARBOR AND ADJACENT CHANNELS (CLAREMONT CHANNEL), NJ

Claremont Channel is presently a non-Federal channel at an average depth of 27 feet mean low water, located in Jersey City just north of the Port Jersey Channel. A project to deepen Claremont Channel to 42 feet mean low water was authorized for construction in the Water Resources Development Act of 1986. While authorized to 42 feet, the modified project will provide adequate shipping economies with a 34 feet channel.

The major users of the channel are two scrap metal exporting companies and a crushed stone aggregate terminal. For the past 10 years, scrap metal exports have averaged more than 600,000 long tons per year and crushed stone transshipments for the past 6 years have totaled nearly 4 million tons annually. Combined, these three firms employ 300 persons directly and nearly 3,000 indirectly through suppliers, truckers and longshoremen.

No funds are contained in the Fiscal Year 1991 Budget recommendations for the Corps of Engineers to initiate the preconstruction phase of this project. Thus, we request that $500,000 be appropriated in Fiscal Year 1991 for preconstruction engineering and design work for improvements to the Claremont Channel.

I will now ask Commissioner Riccio to elaborate on our remaining funding recommendations for the Port.

* * * * * * *

Thank you, Commissioner Zoffinger. I am Anthony M. Riccio, Jr., Commissioner of Ports and Trade, the City of New York.

NEW YORK HARBOR COLLECTION AND REMOVAL OF DRIFT PROJECT, NY & NJ

The New York Harbor Collection and Removal of Drift Project, NY & NJ is aimed at the removal of approximately 2,230 sunken hulks and 149 decaying shore structures that are the sources of dangerous, unsightly and costly harbor drift which also fouls our beaches. The Corps of Engineers has estimated that nearly 18,000 commercial, public and recreation vessels collide annually with drift in our port causing damage to propellers, shafts and hulls. In addition, annual associated repair costs and other economic losses average greater than $53 million.

Mr. Chairman, we have been advised by the New York District, Corps of Engineers that the economics of the Drift Project are to be re-evaluated to satisfy new Corps of Engineers budget policy criteria. This study has delayed the cleanup project for the last six months, and we are here today requesting funds for much of the same work as last year. Nearly half of the funding provided by Congress for the current fiscal year is being diverted for more studies on a project that is half complete. The project authorization was extended only last Congress. In our view, the Corps of Engineers is second-guessing Congress and we believe that this is an unnecessary decision that wastes precious dollars and could seriously delay the completion of the project.

There are no funds being budgeted for continued design and construction. The project slowed during the 100th Congress in anticipation of reauthorization, but with the FY90 appropriation, we looked forward to a resumption of pace and a gain in momentum. Therefore, we request that $2 million be appropriated for the Drift Project in Fiscal Year 1991. These funds would be used to initiate long awaited construction along the Brooklyn II reach on the New York side. The port will be hosting the Christopher Columbus Quincentennial Celebration in 1992. The first area that will be seen by the many foreign vessels participating in the festivities will be Brooklyn. Funds must be appropriated this year if any of this work is to be completed by mid-1992. The funds would also be used to complete construction along portions of the Jersey City and Weehawken-Edgewater waterfronts along the Hudson River and to continue the design of other reaches along the Kill Van Kull, Arthur Kill, East River and Hackensack and Passaic Rivers. This is a modest sum of money that is strongly supported by the States of New York and New Jersey and the City of New York, all local sponsors to the project, who are prepared to pay their non-Federal share of costs.

RED HOOK FLATS ANCHORAGE, NY

Presently, there exist three anchorage areas in the Lower and Upper New York Bays that accommodate ocean going general cargo ships and tankers. There is no additional capacity within these anchorages to accommodate today's modern vessels. The anchorages were designed by the Corps of Engineers in the early 1960's for a vessel averaging 525 feet in overall length with a draft of 30 feet. Today's modern ships are almost 1,000 feet long with drafts of 40 feet therefore requiring additional space and depth beyond that allowed for in the original anchorage design. If our bi-State port is to remain productive, it must modernize to accommodate today's vessels. We urgently request that $250,000 be made available to the Corps of Engineers for a reconnaissance study for the deepening of Red Hook Flats. The Corps has the authority to undertake this study under a Congressional resolution adopted by the Senate Committee on Environment and Public Works on December 5, 1980. No funds for this effort are presently in the proposed Fiscal Year 1991 Budget. We strongly urge that $250,000 be provided for this study.

* * * * * *

On behalf of Mrs. Liburdi, Commissioner Zoffinger and myself, we thank you for the courtesy of presenting our recommendations to the Committee. We will be pleased to try to answer any questions you may have.

Mr. BEVILL. Very good.

Mr. GROSSI. Thank you, Mrs. Liburdi.

Mr. Chairman, there are two projects within the New York harbor and adjacent channels project that I would like to address.

The first is the Port Jersey Channel in Bayonne, New Jersey, which presently serves 13 shipping lines at the Global Marine Containing Terminal.

In 1989, this facility handled 296 vessels arriving with over a quarter of a million 20-foot containers, more than four——

Mr. BEVILL. You only have one minute left, so I think you will want to summarize that.

Mr. GROSSI. Yes, sir.

There are no funds in the fiscal year 1991 budget for this project because we are using funds that were appropriated in fiscal year 1990. But we are anticipating being back in fiscal year 1992 for the construction phase of that project.

Another component of the New York harbor is the Claremont Channel for which there are no funds in the budget. And we are required—we could use $500,000 to initiate the preconstruction engineering in the design phase of that project.

Thank you, sir.

Mr. BEVILL. And Ms. Zedalis, did you have something to add?

Ms. ZEDALIS. Yes, two projects that New York City urgently needs funding for, neither of which are in the Corps of Engineering budget right now. The first has to do with our Harbor Drift Project which I think the committee is familiar with.

There was funding appropriated last year, about $1.9 million, and we thank the committee for its support to continue some of the work in harbor drift.

The Corps of Engineers has used most, well, about a third of that money this year to do a new economic analysis of the part of the project that still needs to be done, delaying the project for another year to year and a half and also using funds that had been designated for design and construction.

So this year we are asking for $2 million for construction of the Brooklyn, as well as design work on a number of other reaches in the New York Harbor.

The second project is the Red Hook Flats Anchorage. We have three anchorages in New York Harbor right now, and all of them are at capacity. So we need to build some additional capacity, particularly with the increase in cargo into the port.

The Red Hook Flats is very shallow in parts, so it needs to be deepened, as well as extended.

We are asking for $250,000 for a reconnaissance study.

Thank you.

Mr. BEVILL. Thank you very much.

Ms. ZEDALIS. Also, we will be submitting an addendum to the committee on a number of non-form items. They are beach projects, including the Coney Island.

Mr. BEVILL. Get those in within five days, please if you want them in the record.

Ms. ZEDALIS. Fine.

Thank you.

[The information follows:]

The City of New York

WASHINGTON OFFICE
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Washington, D.C. 20001

202-393-3903

Judy L. Chesser
Director

April 5, 1990

Hon. Tom Bevill
Chairman
House Appropriations
 subcommittee on Energy and
 Water Development
2362 Rayburn House Office Building
Washington, D.C. 20515

Dear Mr. Chairman:

Enclosed is testimony submitted by New York City Parks Commissioner Betsy Gotbaum. This testimony is to accompany the testimony presented before your committee by New York City Ports Acting Commissioner Pat Zedalis. The hearing was held on March 29, 1990.

Thank you for your consideration.

Sincerely,

Judy L Chesser
Judy L. Chesser

encls.

Statement Submitted By
Betsy Gotbaum
Commissioner
Parks and Recreation
City of New York
Before the
Appropriations Committee
March 29, 1990

New York City is a city on the water, a major port, a city of islands. Only one of the city's five boroughs, or counties, is part of the United States mainland. That is the Bronx. Brooklyn and Queens are both on Long Island, Manhattan is on Manhattan Island, and Staten Island, of course, is also an island. The City has hundreds miles of shore line, and because New York City is one of the most densely populated areas in the world, much of our shore line has been developed, for either industrial, residential or recreational use. Billions of dollars in both public and private funds have been invested on the waterfront.

Fourteen miles of our waterfront have been dedicated to public beaches. Our best known beach is Coney Island in Brooklyn, where the area behind the beach is heavily developed, and under increasing threat of flooding during seasonal storms. Our largest beach, Rockaway, protects a peninsula that is also heavily developed along most of its seven mile length.

These two beaches and a third smaller beach, Orchard Beach, which is heavily used by the minority population of the Bronx, all need sand nourishment in order to continue to be useful both as flood barriers and as recreational facilities for the more than seven million New Yorkers.

Let me be more specific about the needs of each of these three beaches:

CONEY ISLAND BEACH EROSION CONTROL AND FLOOD PROTECTION

The City urges Congress to appropriate funds for the "Rockaway Inlet to Norton Point, N.Y." Shoreline Protection Project.

The Water Resources Development Act of 1986 (P.L. 99-662) includes authorization for the Rockaway Inlet to North Point project providing for beach fill up to 250 feet beyond the historical shoreline at a total cost of $22.5 million to $11.9 million federal share, and $10.6 million state/local share. The local share is financed 70 percent from State funds and 30 percent from the City's Parks Department operating budget.

The Rockaway Inlet to Norton Point project is a small shoreline protection project to deal with critically eroded and hazardous beach conditions at the Coney Island/Sea Gate area of

CONEY ISLAND BEACH EROSION CONTROL AND FLOOD PROTECTION (Continued)

Brooklyn. This beach has been eroding by five to 10 feet each year for the last decade. At high tide, the water laps under the boardwalk. If this project does not go forward, the beach, may no longer exist. Water fountains built on the beach a few years ago are submerged.

The project will arrest the beach erosion which has taken place over the course of the last two decades, and provide of flood protection to the residents and commercial enterprises in the area. On summer weekends 800,000 to one million people enjoy the beach. For millions of low and moderate income New Yorker's it is the only accessible summer recreational resource. The project would also provide protection to the residents and commercial enterprises who would be at risk in the event of a storm. In 1960, tropical storm Donna inundated the area and caused $1.2 million worth of damage. Today, a similar storm could easily cause damages in excess of $20 million.

The City urges Congress to appropriate funds this year for the pre-construction and construction phases of the project at levels determined by the Army Corp of Engineers.

ROCKAWAY BEACH NOURISHMENT

The City urges Congress to appropriate funds to continue beach nourishment at Rockaway Beach under the Army Corps of Engineers "Jamaica Bay Beach Erosion Control Project."

Under the Jamaica Bay Beach Erosion Control Project (See House Document 89-215, 1st Session, 1965), Rockaway Beach was be restored from 1975-77, and nourished five times in the following ten years between 1978-88 to replace sand lost through erosion. The fifth and last of these nourishments occurred in the spring of 1988.

The Water Resources Development Act of 1976 (Sec. 156) authorized additional nourishment for short term projects such as Jamaica Bay for up to 50 years after the initiation of the project. Therefore, the nourishment of this important project is authorized for an additional 40 years. However, an appropriation is needed this year to ensure that the uninterrupted nourishment cycle continues.

Rockaway will require another nourishment in 1990 and periodically thereafter. Without the nourishment, the beach will erode at a rapid rate and the adjacent property will be more susceptible to storm damage. Nourishment of Rockaway Beach will provide storm damage protection to the planned Arverne residential complex, which will offer more than 8,000 units of housing to moderate-income families at a cost of approximately

ROCKAWAY BEACH NOURISHMENT (Continued)

$2 billion. An appropriation is necessary this year to provide for a continuation of the necessary nourishment project. The City urges Congress to provide funds in FY'91 and as necessary over the life of the project to continue this important beach nourishment project.

ORCHARD BEACH EROSION CONTROL

The City urges Congress to appropriate funds to carry out a Beach Erosion Control Project for Orchard Beach, New York.

Orchard Beach is a crescent shaped beach built by the City. The beach fronts on Long Island Sound. It is located on the northeastern shore of the Borough of the Bronx, in Pelham Bay Park. The beach has suffered erosion over the last 20 years, causing crowding and steep slopes. On busy days, beach attendance has exceeded 150,000.

The Water Resources Development Act of 1986 (P.L. 99-662) contains an authorization for the Orchard Beach project at a total cost of $2.48 million, with Federal participation capped at $1 million, to be funded out of the Corps Engineers' discretionary "Section 103" small beach erosion control program.

The Corps conducted a study in 1985 to determine the needs and costs of a beach restoration and subsequent periodic nourishment project for Orchard Beach. The cost estimate was $3.536 million in 1985 dollars or in 1988 dollars $4,093,362.

Orchard Beach was last nourished in 1964. It continues to erode at a rate of approximately 4 feet per year. The City urges authorization and allocation of funding, as determined by the Corps Study for increased funding for the Orchard Beach Erosion Control Project.

CONCLUSION

In summary, let me repeat that the City of New York needs the help of Congress to replenish our beaches. On stormy days the beaches protect thousands of homes and many businesses from being washed away; on sunny days the beaches provide pleasure to hundreds of thousands of New Yorkers who could not afford to go to more remote locations for a day at the beach if the beaches they enjoy now were reclaimed by the sea.

Please give us your help.

THURSDAY, MARCH 29, 1990.

OHIO RIVER NAVIGATION SYSTEM

WITNESSES

R. BARRY PALMER, EXECUTIVE DIRECTOR, DINAMO, THE ASSOCIATION FOR THE DEVELOPMENT OF INLAND NAVIGATION IN AMERICA'S OHIO VALLEY, PITTSBURGH, PA

FRANK MARTIN, EXECUTIVE DIRECTOR, INDIANA PORT COMMISSION, INDIANAPOLIS, IN

CHARLES LEHMAN, FORMERLY OF AMERICAN COMMERCIAL BARGE LINE

Mr. BEVILL. Mr. Barry Palmer is next. We are pleased to have you with us again.

Your prepared statement will be made a part of the record, and you may proceed as you wish.

Mr. PALMER. Thank you, Mr. Chairman.

Mr. MYERS. Mr. Chairman, I would like to say that Frank Martin, who is the director of the Indiana ports, is a friend of mine of long standing.

I am happy to have all of you here. Charlie, of course, is an old friend, but Frank, it's a pleasure to have you, too.

Mr. PALMER. Mr. Frank Martin, who is the Executive Director of the Indiana Port Commission and the members of the DINAMO Board of Directors is really going to make our oral presentation this afternoon.

I also have Mr. Charles Lehman, who is retired now from American Commercial Barge Line here.

Mr. MYERS. He's retired?

Mr. PALMER. But Mr. Martin has been at the Indiana Port Commission for a little more than a year now. He managed the Port of Chicago for Mayor Daley. He went to Oregon and worked out there for the state government for the ports.

And now he is back in our region, and we are delighted to have him a part of our effort.

Mr. MARTIN. I will try to be brief.

Our entire comments have been submitted for the record. We are responsible for the development for the three ports in the State of Indiana, two large river ports located at Jeffersonville, Indiana, and Mount Vernon, and the International Port.

We have had a long and strong involvement with the DINAMO organization, and I am pleased to be here today with Director Lehman to make these comments and to thank the committee, particularly leadership of the committee, on the efforts that they have put forth on getting us where we are today.

Literally thousands of users are directly and indirectly related to the resurgence in the river traffic that we are having on the Ohio River. We need to develop a greater capacity on the Ohio River system, with the new activities that are occurring in the projected activities over the 1990s.

We urge the support, Mr. Chairman, of you and the colleagues for Ohio Valley Lock and Dam modernization objectives outlined in the present and fiscal year 1992 budget.

Attached to my submitted statement is the funding capabilities for lock and dam construction, preconstruction engineering and design activities and general investigation studies relating to modernization of the Ohio River system from the U.S. Army Corps of Engineers, Ohio River Division, Commanded by General Paul Chinen.

Again, we are grateful for the support of the committee for construction funding of the Gallipolis Locks on the Ohio River, Grays Landing Lock and Dam, and New Point Marion Lock Project on the Monongahela River, and the Winfield Lock on the Kanawha River.

We urge support, continuous support for full funding of these facitlies.

There is one project that which we are requesting some additional funding above the level indicated in the President's budget, and that project is the Olmsted Lock and Dam, which was authorized in 1988 by the Congress.

This project replaces Locks and Dams 52 and 53 on the Ohio and on the Kentucky and Illinois borders. The present schedule of the Corps of Engineers, which is really totally unacceptable to Ohio Valley interests, called for initiation of construction in 1993 and completion of the project in the year 2005, some 15 years from now.

We don't understand, Mr. Chairman, why it should take five years from the time it's authorized until construction can begin, considering that the review done by the Corps showed that there is $25 return for every dollar invested by the Federal Government in the private sector Waterways Trust Funds.

Specifically, we are requesting an additional $400,000 which is needed for the acquisition of real estate in fiscal year 1991.

Also, if there be some flexibility in the budget process, we could clearly utilize an additional 3.1 million dollars for design work to complete the lock design memorandum and initiate plans and specifications for lock construction.

A total of $7 million is needed in the next fiscal year, just to keep this project on schedule. The need for expeditious action on this vital navigation project has already been proven, and we need your help to accelerate progress in the new Olmsted Lock and Dam.

On behalf of the DINAMO Board of Directors and its membership representative of the five states and my sister ports up and down the Ohio River, Mr. Chairman, we thank you for the opportunity to appear before the committee today and plead our case.

[The statement of Frank Martin follows:]

DINAMO
Three Gateway Center
Pittsburgh, PA 15222
(412) 392-4550

The Association
for the Development
of Inland Navigation in
America's Ohio Valley

WITNESS LIST

U.S. House of Representatives
Committee on Appropriations
Energy and Water Development Hearings

March 29, 1990
2:45 P.M.

R. Barry Palmer
Executive Director
DINAMO
The Association for the Development
of Inland Navigation in America's Ohio Valley
Pittsburgh, Pennsylvania

Frank Martin
Executive Director
Indiana Port Commission
Indianapolis, Indiana

a heritage of promoting lock and dam improvements since 1895

DINAMO
Three Gateway Center
Pittsburgh, PA 15222
(412) 392-4550

The Association
for the Development
of Inland Navigation in
America's Ohio Valley

TESTIMONY

Presented by:

Frank Martin
Executive Director
Indiana Port Commission
Indianapolis, Indiana

On Behalf of:

DINAMO
The Association for the Development
of Inland Navigation in America's Ohio Valley
Pittsburgh, Pennsylvania

Presented to:

U.S. House of Representatives
Committee on Appropriations
Energy and Water Development Subcommittee

March 29, 1990

a heritage of promoting lock and dam improvements since 1895

Mr. Chairman and Members of the Subcommittee:
I am Frank Martin, Executive Director of the Indiana Port Commission. As the Executive Director I am responsible for development of the Clark Maritime Centre at Jeffersonville, Indiana Southwind Maritime Centre at Mount Vernon, Indiana both on the Ohio River, and Indiana's International Port located on Lake Michigan at Burns Harbor. The Indiana Port Commission has been affiliated with DINAMO for many years, Mr. Chairman, and those of us associated with port commissions understand the importance of the waterways and locks and dams to the economy of the Ohio Valley, and to the many businesses and families we serve.

DINAMO is a multi-state, membership-based association of business and industry, labor, and state government leaders from the Ohio Valley states, whose singular purpose is to expedite the modernization of the lock and dam infrastructure on the Ohio River Navigation System. Our request for funding of lock and dam modernization action in the Ohio Valley is as follows:

Recommendations for Fiscal Year 1990

(1) For the GALLIPOLIS MODIFICATION PROJECT on the Ohio River, $46,300,000 for continued construction.
(2) For the GRAYS LANDING LOCK AND DAM PROJECT on the Monongahela River (also known as the replacement of Lock and Dam #7) $31,000,000 for continued construction.
(3) For the POINT MARION LOCK PROJECT on the Monongahela River (also known as the replacement of Lock #8) $28,300,000 for continued construction.
(4) For the WINFIELD LOCK REPLACEMENT PROJECT on the Kanawha River in West Virginia, $16,200,000 to continue construction.
(5) For the OLMSTED LOCKS AND DAM PROJECT on the Ohio River, to replace Locks and Dams #52 and #53, KY/IL, $3,532,000 to continue pre-construction engineering and design.
(6) For the MCALPINE LOCKS AND DAM, $1,000,000 for continued pre-construction engineering and design.
(7) For the LOWER CUMBERLAND AND LOWER TENNESSEE RIVERS STUDY, $1,008,000 to continue navigation system reports on the two rivers.
(8) For LOCKS AND DAMS #2, #3, AND #4 on the Monongahela River $900,000 for pre-construction engineering and design.
(9) For the MARMET LOCK on the Kanawha River in West Virginia, $650,000 for continued condition, economic and environmental investigations.
(10) For the OHIO RIVER MAINSTEM STUDY $1,065,000 for continued condition studies, economic and environmental evaluations.
(11) For the UNIONTOWN LOCKS AND DAMS, $450,000 for continued planning.

Also, we are requesting additional funding for the Olmsted Project above the level in the President's FY 1991 Budget. This project would replace Locks and Dams 52 and 53, Ohio River, on the Kentucky/Illinois border. The present schedule of the Corps of Engineers calls for the initiation of construction in 1993 and completion of the project in 2005, some 15 years from now. We have been pressing the Assistant Secretary of the Army (Civil Works) and the Corps of Engineers to initiate construction of this project since the Congress authorized the new Olmsted Lock and Dam in 1988. Why, Mr. Chairman, should it take five years from the time a project is authorized until construction can begin? Why, Mr. Chairman, when the Olmsted Lock and Dam will return $25.00 for every $1.00

invested by the federal government and the private sector with monies in the Inland Waterway Trust Fund?

We specifically are requesting a new construction start for this project. Particularly an additional $400,000 is needed for the acquisition of real estate in FY 1991. Also, the Corps of Engineers can clearly utilize an additional $3.1 million for design work to complete the lock design memorandum and initiate plans and specifications for lock construction. The need for expeditious action on this vital navigation project has already been proven, and we need your help to accelerate progress on the new Olmsted locks and dam. Mr. Chairman, we wish to submit for the record three separate documents: the first document, labeled Attachment I is a copy of a letter from Brigadier General Paul Y,. Chinen, Commander, Ohio River Division, U.S. Army Corps of Engineers, stating the Fiscal Year 1991 funding capabilities for lock and dam construction, pre-construction engineering and design (PED) activities, and General Investigations studies for modernization of the Ohio River Navigation System. Included is a statement of the discussion between General Chinen and the distinguished Ranking Republican member of this Subcommittee, Mr. John Myers, regarding the need for accelerated Corps of Engineers work on the Olmsted project. The other two documents, Attachment II and Attachment III, are reports prepared for DINAMO by Marvin J. Barloon, Carlton Professor of Economics (Em.), Case Western Reserve University, Cleveland, Ohio. These reports are titled: "The Urgency of a Modernized Ohio River Navigation System to the Coal Industry of Ohio" and "The Importance of the Ohio River Navigation System to the Electric Power Industry", respectively.

These reports provide important insights into the relationship of the Ohio Valley waterways, and particularly DINAMO lock and dam modernization objectives, to the economy of the Ohio Valley state and the nation. Following are Executive Summaries of these two reports:

EXECUTIVE SUMMARY

The Urgency of a Modernized Ohio River Navigation System to the Coal Industry of Ohio

Ohio shares the benefits of low-cost water transportation by virtue of the state's 445 mile frontage on the Ohio River. This gives the state low-cost access to sources and markets through the system, including the cities of Pittsburgh, Charleston, Huntington, Louisville, Evansville, Nashville (on the Cumberland) and all Tennessee River ports. In addition, because of the Ohio's confluence with the Mississippi River at Cairo, Illinois, the river provides a through waterway routing to St. Louis, Chicago, and the twin cities on the north, to Kansas City and Tulsa on the west, and on the south to the entire lower Mississippi Valley and the Gulf Coast, from Florida to the Mexican border.

Apart from construction income, the longer-term benefits to the Ohio economy will be those consequent on heightened efficiency of the waterway system, accruing via the shipping and receiving industries to consumers, workers, and investors throughout the state. The largest volume commodity shipped to the Ohio River is coal, and the river is more important to Ohio's coal industry than the railroads. According to the U.S. Department of Energy, in 1986, Ohio shipped one and one-half times as much coal by river as by rail.

The National Coal Association projects that total demand for U.S. coal, domestic and export, for the year 2000 at 1,181 million tons. (This is the Association's "moderate" projection.) Whether or not Ohio's coal industry shares in this favorable outlook depends mainly on the navigation improvement program. From 1976 to 1986, the total production of the mining districts of the Ohio River Basin increased by 24.2 million tons. This was entirely an increase in shipments on the rivers. Indeed, the river shipments actually increased by more than the over-all rise in production (32.9 million tons), while shipments by other modes declined. If this relationship continues for the remainder of the century, the entire outlook for the region's coal industry rests on the programmed improvement of the Ohio River navigation system.

The benefits of riverborne coal are also pervasive in the number and extent of the communities affected. There are 24 coal producing counties in Ohio, all in the eastern, or Appalachian, area. The 1980 population of these 24 counties was just over 1.7 million. The importance of coal mine revenues in the Appalachian can hardly be overstated.

Far from being confined to the mining personnel, coal mine revenues exert an impact on all varieties of local enterprise and public services. The initial income, of course, flows to those who contribute, directly or indirectly, to the production and shipment of the coal: mine employees, proprietors, investors and mine suppliers. Most of this is re-spent locally, creating additional income for enterprises such as retail stores and professional services and revenues for public agencies (schools, safety forces, health services, street maintenance, etc.) The local impact of their re-spending (commonly called the "multiplier") is generally estimated at being about equivalent to the initial income, that is, a doubling of such income. The prosperity of the coal industry thus permeates every feature of the community life in the mining communities.

Ohio coal shipped on the rivers in 1986 had a value at the mine of $646.2 million. Studies in Appalachian mining areas indicate that about $409.7 million of this was local income. This includes payrolls, proprietor's income, supplies, maintenance, fuels, and other local purchases by the mining enterprises. Re-spending at a multiplier of two indicates total income from riverborne coal, direct and indirect, to the 1.7 million people of about $800 million.

In individual counties, the local impact is much greater. In some localities coal mining is the dominant economic activity. taking, for example, the ten Ohio counties producing over 1.5 million tons each in 1986, the riverborne coal alone represented direct and indirect income of over $5,675 per household.

Recognizing that the industry's growth over the past ten years has been entirely a growth in marketing via rivers, it is clear that the consequence has been a sustained strength of wholesome community life and well-being in the principal coal-producing counties of Ohio and that their share in the projected growth of the coal industry into the Twenty-First Century is directly dependent on a modernized river navigation system.

With the passage of time, the need for updating the Ohio River navigation system to modern standards becomes progressively more urgent. These present deteriorated works are subject to shut-downs for repairs with increasing frequency and duration, obstructing traffic, raising costs, and disrupting delivery and production schedules in the shipping and receiving industries. The affected industries include electric power, chemicals, iron and steel, refining and distribution of gasoline and fuel oil, and agriculture. Coal, as the largest waterway user, is the most concerned. Replacement projects require from five to ten years for completion, and every year heightens the urgency for relief. Expeditious progress is essential.

EXECUTIVE SUMMARY

The Importance of the Ohio River Navigation System to the Electric Power Industry

The thermal generating plants on the banks of the System consume coal almost exclusively. The Army Corps of Engineers reports that about 78 percent of all the waterborne coal moved on the System is consigned to electric power plants, the remainder to steel and other industries and for export. On this basis, it may be estimated that the riverside plants received about 82.9 million tons of waterborne coal in 1987, or just short of 75 percent of their total consumption. The remainder was received via land modes, usually for short distances and at water-competitive rail and trucking rates.

The unmatched low cost of river barging, especially of dry bulk commodities, constitutes an enormous saving in the cost of electricity. The typical barging rate per ton of coal in 1899 was only four mills per mile (A mill is one-tenth of one cent.) At this rate, a ton of coal could be hauled 60 miles by river barge for less than the cost of a first-class postage stamp (25 cents). For uncontracted haulage, shippers sometimes hdd to pay "spot rates", as much s 50 percent higher. At this rate, the charge for hauling an average ton of coal 75 miles would be about the same as the U.S. postage on a two-ounce letter.

This transportation bargain converts itself into a lower cost of fuel at the power plant and of electricity for industries, farms, and households. In 1987, the average fuel cost at fossil-fueled power plants in the United States was 18.4 mills per kilowatt-hour. For plants on the Ohio River System it was only 14.3 mills. These riverside plants generated over 286.4 billion kilowatt-hours in 1987 at an aggregate fuel cost saving in this one year of about $1.17 billion as compared with the national average. As a measure of magnitude, this was equivalent to about $119.00 for each of the 9.8 million households in the Ohio Basin. Actually, of course, much of the saving took the form of low rates to major industries, commercial establishments, and farms, thereby serving as a stimulus to production, employment, and incomes.

On this foundation, electric power has become a specialization of the region, like corn in Iowa or orange juice in Florida. In 1987, the counties on the banks of the Ohio River System in the eight states the System serves had a population of 4.1 percent of the U.S. total. This includes such metropolitan areas as Pittsburgh, Cincinnati, Louisville, and Nashville, in addition to a large number of smaller communities. With only 4.1 percent of the nation's population, waterside electric plants in these counties produced 11.1 percent of the nation's electric power.

Navigation on the Ohio River System also supplies coal to generating stations outside the Basin. In 1987, some 12.5 million tons were carried all-water to plants on the Gulf Coast between New Orleans and Tampa, Florida. An additional 9.3 million moved all-water to plants on the Mississippi and Illinois Rivers, large tonnages of this to Memphis and Chicago.

Cargo originated by barge on the System was transferred at barge-to-rail terminals for delivery to power plants in north and central Georgia, to plants in Maryland, and via rail and lake to eastern Canada. All of this coal had to work its way through antiquated and run-down lockage structures on the originating streams.

We have referred previously to the percentage of the System's electricity output to the national total. Its dominance in the supply in individual Ohio

Basin states is even more striking. The System's riverside counties in Ohio, for example, are home to only 15.6 percent of the state's population. But, in 1987, their waterside plants generated 68.7 percent of Ohio's electricity. Only 10.0 percent of Hoosiers live in counties bordering the Ohio River. But, these counties produced 35.5 percent of Indiana's electricity. In Alabama, the corresponding percentages are 18.0 for population (on the Tennessee River) and 25.0 for electric power.

West Virginia is preeminently a river state. Three navigable rivers either adjoin or lie within West Virginia, and 50.3 percent of the people live in counties. In 1987, these produced 64.5 percent of the state's electric energy. Tennessee, also a river state, is served by two navigable tributaries of the Ohio. The riverside Tennessee counties are home to 36.9 percent of the state's population and, in 1987, produced 71.4 percent of the state's electricity. (This does not include Memphis on the Mississippi.)

The low cost and abundance of electricity in the Ohio Valley underlies much of the region's industrial strength, especially for industries which are energy-intensive. Aluminum smelting, an electrolytic process, is especially notable. Major concentrations of chemical plants, also energy intensive, are located in the eastern Ohio Basin and the Tennessee Valley. According to the American Iron and Steel Institute, the steel produced by electric furnaces in the U.S. increased from 24.9 percent of the total in 1979 to 36.9 percent in 1988, a change associated with the increasing strength of the domestic industry in international competition.

The emerging industrial renaissance of the Northeast Quadrant of the United States includes an increasing element of newer high-technology, energy-intensive industries utilizing, for example, robotics in the motor vehicle, machinery, and appliance industries. Advanced food processing industries and computer technology are additional illustrations. American farming has become an energy-intensive industry, relying on an abundance of electric energy for powered machinery as well as floodlighting of outdoor work areas and of the interior of large structures. By means of these utilizations, the electric power of the Ohio Valley supports an extensive complex of basic industry enhancing the strength of the national economy in international competition, an asset of nationwide benefit. The efficient carriage of coal on the Ohio River System is a central feature of this role.

On behalf of the DINAMO Board of Directors I thank you for allowing this time to present to you our concerns about the future of the inland navigation system in the Ohio Valley. Commercial navigation on the Ohio River mainstem is of paramount importance to Indiana. Thousands of Hoosiers owe their jobs directly and indirectly to riverborne commerce and industry. Direct access to this least cost transportation mode affords our farmers, manufacturers, utilities and retail consumers significant savings, greatly enhancing Indiana's economic climate.

ATTACHMENT I

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DIVISION, OHIO RIVER
CORPS OF ENGINEERS
P.O. BOX 1159
CINCINNATI, OHIO 45201-1159

REPLY TO
ATTENTION OF

9 MAR 1990

Mr. Barry Palmer
Executive Director
DINAMO
Three Gateway Center
Pittsburgh, Pennsylvania 15222

Dear Mr. Palmer:

This is in response to your February 20, 1990 letter, requesting Fiscal Year 1990 funding capabilities for lock and dam construction, preconstruction engineering and design (PED) activities and General Investigations studies relating to modernization of the Ohio River Navigation System.

A tabulation outlining this information is enclosed. Capabilities in excess of the approved budget amount should be considered under the following qualifying language:

> "Although project and study capabilities reflect the readiness of the work for accomplishment, they are in competition for available funds and manpower Army-wide. In this context, the capability amounts shown consider each project or study by itself without reference to the rest of the program. However, it is emphasized that the total amount proposed for the Army's civil works program in the President's budget is the appropriate amount consistent with the administration's assessment of national priorities for federal investments and the objectives of avoiding large budget deficits and the serious adverse effect that government borrowing is having on the national economy. In order to maintain these overall budgetary objectives, we could only utilize additional funds on individual projects and studies if offsetting reductions were taken."

The following information confirms my discussion with Mr. John Myers in testimony before the House Appropriation Subcommittee on Energy and Water Development on February 9, 1990. In response to Mr. Myers' question about additional capability for real estate acquisition, I stated that we do not have an approved capability; however, if we were so directed, we could begin land acquisition in Fiscal Year 1991, utilizing an additional $400,000, but this would not advance completion of the project. In response to Mr. Myers' question about additional funds to advance design efforts, I stated that the requested Fiscal Year 1991 funds will allow us to complete preconstruction engineering and design. Although we do not have an approved capability, if so directed, we could use additional design funds in the amount of $3,100,000 to complete the lock design memorandum and initiate plans and specifications for lock construction. These additional funds will advance design work that would normally be done during construction.

I trust this information meets your present needs. Please let me know if I can provide any further data on our funding and project status.

Sincerely,

Paul Y. Chinen
Brigadier General, U.S. Army
Commanding

Enclosure

Ohio River Division
Fiscal Year 1991 Funding Capabilities

Studies

Name of Study or Project	Amount in FY 91 President's Budget	FY 91 Capability	Purpose of Additional Capability
Cumberland--Tennessee Rivers, KY, GA, AL, MS, NC, TN & VA	$1,008,000	$1,008,000	No additional requirement.
Green & Barren Rivers, KY	0	800,000	Initiate feasibility phase of study.
Kanawha River Navigation, WV	650,000	650,000	No additional requirement.
Lake Erie--Ohio River Canal, OH & PA	0	0	Special report will be completed with available funds.
Ohio River Mainstem, KY, IL, IN, OH PA & WV	1,065,000	1,065,000	No additional requirement.
Uniontown Locks and Dam, KY, IL & IN	250,000	450,000	Complete reconnaissance phase and initiate feasibility phase study.
	Preconstruction Engineering and Design (PED)		
Lock and Dam 3 & 4 Monongahela River, PA	900,000	900,000	No additional requirement.
McAlpine Locks and Dam, IN & KY	1,000,000	1,000,000	No additional requirements.
Olmsted Locks and Dam, IL & KY	3,532,000	3,532,000	Complete PED.

Ohio River Division
Fiscal Year 1991 Funding Capabilities
(Continued)

Construction

Gallipolis Locks and Dam, WV & OH	46,300,000	46,300,000	No additional requirement.
Grays Landing Lock and Dam, PA	31,000,000	31,000,000	No additional requirement.
Point Marion Lock and Dam, PA & WV	28,300,000	28,300,000	No additional requirement.
Winfield Lock and Dam, WV	16,200,000	16,200,000	No additional requirement.

ATTACHMENT II

URGENCY OF A MODERNIZED OHIO RIVER NAVIGATION SYSTEM TO THE COAL INDUSTRY OF OHIO

Prepared for:
DINAMO, Inc.
Pittsburgh, Penna.

By:
Marvin J. Barloon
Case Western Reserve University

April 6, 1989

After delays of many years, action is now being taken to relieve serious bottlenecks on the Ohio River navigation system. Other modes of transportation are up to date. Since World War II, major railroads serving Ohio have been modernized to computer-age standards. The new National Network for Trucks, 8,192 miles of it within the state, links Ohio's modern highways to all regions of the continent. But, the Ohio River System has been half forgotten. Modernization was well under way until the mid-1970's, when all progress came to a halt. Serious bottlenecks persist as lock-and-dam structures built in the days of the steam locomotive and the Model-T Ford continue to hamper Ohio's access to favorable markets and sources of supply.

Low Cost of River Transportation

Efficient transportation on the inland rivers is important to the state's economy. River transport specializes in bulk commodities moved in large tonnages--coal, gasoline, fuel oil, chemicals, building materials, iron and steel, farm crops, and the like. For this kind of freight, waterway cost is incomparably low. In 1986 (the latest year reported), the U. S. inland rivers carried just short of 16.0 percent of the nation's freight. But, they charged only 1.1 percent of the nation's freight bill.

Ohio shares in this saving by virtue of the state's 455-mile frontage on the Ohio River. This gives the state low-cost access to sources and markets throughout the system, including the cities of Pittsburgh, Charleston, Huntington, Louisville, Evansville, Nashville (on the Cumberland), and all Tennessee River ports. In addition, because of the Ohio's confluence with the Mississippi at Cairo, Illinois, the river provides a through waterway routing to St. Louis, Chicago, and the Twin Cities on the north, to Kansas City and Tulsa on the west, and on the south to the entire lower Mississippi Valley and the Gulf Coast, from Florida to the Mexican border.

PRIORITY NAVIGATION PROJECTS ON THE OHIO RIVER SYSTEM

Upper Ohio Basin

Monongahela River - Locks Nos. 7 and 8. These two structures on the Pennsylvania-West Virginia border, completed in 1925, are grossly inadequate to modern navigation technology and so badly deteriorated that, in the absence of replacement, abandonment has been considered as a realistic alternative. Their collapse or abandonment would render valueless the navigation features of three major upstream lock-and-dam installations in northern West Virginia, built since World War II, and would isolate the communities of Fairmont and Morgantown from the rest of the navigation system.

Fortunately, construction of new replacement works of adequate capacity on this reach of the Monongahela was initiated in 1988, with completion anticipated in 1993, assuming congressional funding at the full capability of the Army Corps of Engineers.

Kanawha River - Winfield. The old Winfield Locks, completed in 1937 near the mouth of the Kanawha, capable of moving only one "jumbo" barge at a time, are now carrying five times the freight of the pre-war years and are inadequate to the emerging traffic demand of the 1990's. Coal shippers state that congestion is already adding $0.37 per ton of cargo to the transit cost.

Large tonnages of Ohio products, including chemicals and petroleum products, utilize these locks for access to the Charleston, West Virginia, area. The President's budget, submitted to Congress in January, 1989, would provide funds for initiating construction at Winfield in April, 1990, with availability for navigation projected for 1996, contingent on funding at full Corps capability.

Ohio River - Gallipolis. At Gallipolis, Ohio, the old locks-and-dam (also of 1937 vintage) for which replacement was recommended by the Corps of Engineers 20 years ago, are badly run down, congested, and hazardous to life and property, hampering access by industries in the central and lower Ohio Valley to the Kanawha River, the upper Ohio Basin, and the Pittsburgh area. Construction of modernized facilities got under way at Gallipolis late in 1987, with openeing to traffic indicated in 1996, subject, however, to sustained annual funding by Congress at full Corps capability.

Central Ohio Basin

Ohio River - McAlpine. The McAlpine works at Louisville, Kentucky, are on the verge of being swamped by rapidly growing traffic, tonnage having risen from 33.0 million in 1970 to 54.0 million in 1987 and projected at well over 80.0 million by the time additional capacity can be brought into service. Much of this is Ohio commerce.

McAlpine consists of a modern 1,200-foot lock supplemented by an antiquated 600-foot chamber of inadequate depth and excessive turbulence opened in 1921 and sited under a movable bridge in a manner disuptive to traffic by both land and water. For this reason, the 600-foot lock is used only as a peak demand facility.

In early 1989, the Corps of Engineers was actively engaged in preparation of a feasibility report and environmental impact study looking towards provision of capacity at McAlpine sufficient to forestall towards the end of the century an otherwise serious traffic crisis.

Lower Ohio Basin

Tennessee River - Kentucky. This facility, 22 miles upstream on the Tennessee from the river's confluence with the Ohio, is the gateway between the main stream of the Ohio and two important waterways to the south, the Tennessee River and the Tennessee-Tombigbee connection leading to the Port of Mobile. In the access of Ohio River commerce to the Tennessee-Tombigbee, the only additional lockage on the Tennessee is that at Pickwick Landing, upstream from the Kentucky Lock and a dual-lock structure with the main lock 110 feet x 1,000 feet. The Kentucky Lock, only 600 feet long, needs to be brought up at least to this standard.

Because the Kentucky Lock has no auxiliary, when it was closed for rehabilitation for 104 days in 1986, traffic had to make an expensive detour via the Barkley Canal to and from the Cumberland River. Traffic demand at Kentucky has been growing rapidly, from transits of only 15.0 million tons in 1970 to 30.1 million in 1987 and is expected to reach 39.0 million by 2000. Relief of this bottleneck is under study by the Hashville District of the Corps of Engineers.

Ohio River - Olmsted. Ohio has an especially big stake in the projected replacement at Olmsted, Illinois, of old Locks-and-Dams Nos. 52 and 53 near the mouth of the Ohio and the Ohio Valley's principal gateway to the entire Mississippi River System and the Gulf Coast. The two antiquated structures, completed in 1928 and 1929, are supplemented by more recent temporary and unreliable locks which will be well beyond their design service life before a replacement can be completed.

In 1987, these makeshift works transited over twice as much cargo tonnage as the entire St. Lawrence Seaway between Lake Ontario and Montreal, U. S. and Canadian combined, much of this massive traffic to and from Ohio.

In 1988, Congress authorized construction of a new facility at Olmsted of adequate capacity for the mounting traffic load, but, in early 1989, no funds had yet been appropriated for this purpose. The project will require at least 10 years to complete.

CONSTRUCTION REVENUES AND FUEL TAX FINANCING

This large-scale and long-term modernization program represents substantial opportunity for the region's construction industries. At 1986 price levels, the prospective federal investment in the Gallipolis, Ohio, project is estimated at $336.0 million, and work on the Kanawha and Monongahela Rivers will add an additional $400.5 million, for a total of $736.5 million in the upper basin.

Corresponding estimates have not yet been prepared for the McAlpine project at Louisville or the Kentucky Lock, but the Olmsted project near the mouth of the Ohio is estimated at $801.0 million. In short, the total program will represent an investment probably approaching $2.0 billion, much of which will accrue to Ohio building and builders' supply industries. Unlike construction projects which are completed in a rather short time, this proram will continue for many years, clearly well into the Twenty-First Century.

The Waterways Fuel Tax

Ohio shippers and consumers, as waterway beneficiaries, are already making a substantial portion of this investment. Inland waterway carriage is subject to a federal waterways fuel tax, imposed on shallow-draft vessel movements since 1980 and programmed to rise in stages to 20 cents a gallon by 1995. Revenues from this tax are being accumulated in the Inland Waterways Trust Fund from which withdrawals are made to pay one-half of the outlays for all new inland waterway construction. It is reasonable to expect that Ohio's contribution to fuel tax revenues may be returned, at least in part, as payment for work performed by the state's construction industries and workers.

THE OHIO COAL INDUSTRY

Apart from construction income, the longer-term benefits to the Ohio economy will be those consequent on heightened efficiency of the waterway system, accruing via the shipping and receiving industries to consumers, workers, and investors throughout the state. The largest volume commodity shipped on the Ohio River is coal, and the river is more important to Ohio's coal industry than the railroads. According to the U. S. Department of Energy, in 1986, Ohio shipped one and one-half times as much coal by river as by rail.

River Transportation as the Growth Factor in Coal Production

The National Coal Association projects the total demand for U. S. coal, domestic and export, for the year 2000 at 1,181 million tons. (This is the Association's "moderate" projection.) Whether or not Ohio's coal industry shares in this favorable outlook depends mainly on the navigation improvement program. From 1976 to 1986, the total production of the mining districts of the Ohio River Basin increased by 24.2 million tons. This was entirely an increase in shipments on the rivers. Indeed, the river shipments actually increased by more than the over-all rise in production (32.9 million tons), while shipments by other modes declined. If this relationship continues for the remainder of the century, the entire outlook for the region's coal industry rests on the programmed improvement of the Ohio River navigation system. The 1976-1986 relationships appear in Chart I (next page).

River Transport as a Restraint on Railroad Rates

Waterway competition holds railroad rates in check. During the 1980's, one of the major concerns voiced by coal executives has been the high rates imposed by railroads on shipments for which the rails have little significant competition. As an offset to this problem, in December, 1988, two major railroads, CSX Transportation and the Norfolk Southern Corporation, rescinded programmed rate increases on Appalachian coal carried to Atlantic ports for export. Waterway competition was a clear incentive for this rescision. Appalachian coal has an alternative outlet. Shippers can move the coal by barge down the Ohio and

CHART I.

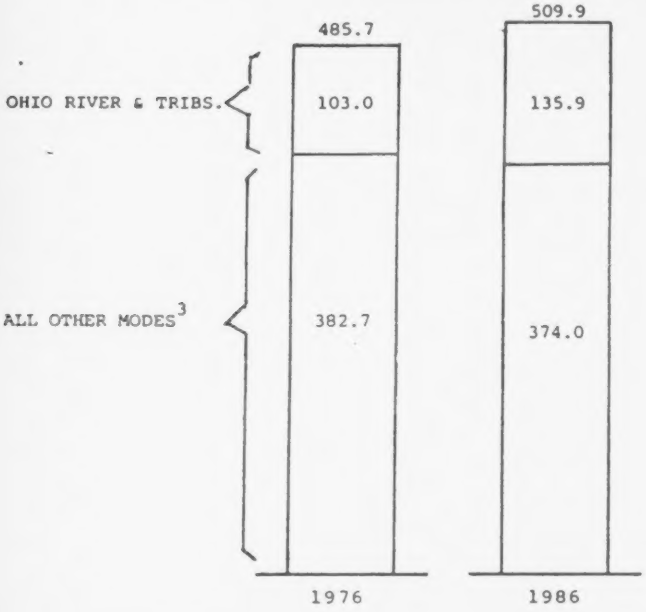
COAL PRODUCTION - OHIO RIVER BASIN COAL-PRODUCING DISTRICTS[1]

AND

COAL SHIPMENTS ON THE OHIO RIVER AND TRIBUTARIES[2]

1976 AND 1986

(Millions of Tons)



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[1] The Ohio Basin coal producing districts are: #2 (western Pa.), #3 and #6 (northern W. Va.), #4 (Ohio), #7 (Va. & southeastern W. Va.), #8 (southern W. Va., eastern Ky., & eastern Tenn.), #9 (western Ky.), #10 (Ill.), #11 (Ind.), and #13 (southeastern Tenn., Ala., & Ga.).

[2] "Coal Shipments on the Ohio River and Tributaries" include all-river, rail-river, and truck-river.

[3] "All Other Modes" include all-rail, all-truck, and local consumption.

SOURCES: U. S. Department of Energy
U. S. Department of the Army, Corps of Engineers

Mississippi Rivers for export via the New Orleans area. This influence bears on rail rates on other movements as well.

In the 1970's only about a million tons of coal were exported yearly via New Orleans. But, after 1980 the riverborne export movement rose irregularly to 9.4 million tons in 1986. There appears little doubt that the two railroads set their Atlantic coast export rates with an eye on the waterway alternative. Shippers by rail thus have a substantial stake in the modernized river system.

Because of its low cost, waterway transport carries off the regional surplus to distant coal markets beyond reach by rail or truck, keeping coal competitive in these markets while sustaining values at the mine. In 1986, the river system carried 22.7 million tons of Ohio Basin coal to the Gulf Coast, some for export, but most for coastal utilities.

The "Multiplier" Community Impact

The benefits of riverborne coal are also pervasive in the number and extent of the communities affected. There are 24 coal-producing counties in Ohio, all in the eastern, or Appalachian, area. The 1980 population of these 24 counties was just over 1.7 million. The importance of coal mine revenues in the Appalachian counties can hardly be overstated.

Far from being confined to the mining personnel, coal mine revenues exert an impact on all varieties of local enterprise and public services. The initial income, of course, flows to those who contribute, directly or indirectly, to the production and shipment of the coal: mine employees, proprietors, investors and mine suppliers. Most of this is respent locally, creating additional income for enterprises such as retail stores and professional services and revenue for public agencies (schools, safety forces, health services, street maintenance, etc.). The local impact of this respending (commonly called the "multiplier") is generally estimated as being about equivalent to the initial income, that is, a doubling of such income. The prosperity of the coal industry thus permeates every feature of community life in the mining communities.

Ohio coal shipped on the rivers in 1986 had a value at the mine of $646.2 million.[1] Studies in Appalachian mining areas indicate that about $409.7 million of this was local income.[2] This includes payrolls, proprietors' income, supplies, maintenance, fuels, and other local purchases by the mining enterprises. Respending at a multiplier of two indicates total income from riverborne coal, direct and indirect, to the 1.7 million people of about $800 million.

In individual counties, the local impact is much greater. In some localities coal mining is the dominant economic activity. Taking, for example, the ten Ohio counties producing over 1.5 million tons each in 1986, the riverborne coal alone represented direct and indirect income of over $5,675 per household.[3]

Recognizing that the industry's growth over the past ten years has been entirely a growth in marketing via the rivers, it is clear that the consequence has been a sustained strength of wholesome community life and well-being in the principal coal-producing counties of Ohio and that their share in the projected growth of the coal industry into the Twenty-First Century is directly dependent on a modernized river navigation system.

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[1] Footnotes appended.

Coal Tonnages Via Respective Lockage Sites

Something of the bearing of the river modernization program on the Ohio coal industry is indicated in Table I, representing tonnages and values of Ohio coal which, in 1986, transited respective sites programmed for improvement. Large as they are, these figures understate the impact. Waterway carriage has been growing since 1986. Furthermore, the figures do not show the substantial revenues to railroads and trucking firms of the large rail-river and truck-river movements. In 1986, in the mining districts of the Ohio Basin, 37.0 percent of the riverborne coal reached the barge-loading terminals by rail and 37.4 percent by truck.[4]

TABLE I.

TONNAGES AND VALUES OF OHIO COAL

SHIPPED VIA RESPECTIVE LOCKAGE SITES ON THE OHIO RIVER AND ITS TRIBUTARIE

1986

Via Programmed Improvement Sites

Lockage Sites	Tons	Mine Values[5]
Gallipolis Only	4,732,000	$ 155,210,000
Gallipolis, McAlpine, & Olmsted	125,000	4,100,000
Gallipolis, McAlpine, & Kentucky	2,638,000	86,526,000
Gallipolis & McAlpine	49,000	1,607,000
McAlpine Only	526,000	17,253,000
McAlpine & Olmsted	1,714,000	56,219,000
McAlpine & Kentucky	1,303,000	42,738,000
Totals Via Programmed Sites	11,087,000	$ 363,653,000
Via Modern Locks and Open River	8,613,000	282,506,000
Total Riverborne Shipments of Ohio Coal	19,700,000	$ 646,159,000

The Rising Urgency of Modernization

With the passage of time, the need for updating the Ohio River navigation system to modern standards becomes progressively more urgent. The present deteriorated works are subject to shut-downs for repairs with increasing frequency and duration, obstructing traffic, raising costs, and disrupting delivery and production schedules in the shipping and receiving industries. The affected industries include electric power, chemicals, iron and steel, refining and distribution of gasoline and fuel oil, and agriculture. Coal, as the largest waterway user, is the most concerned. Replacement projects require from five to ten years for completion, and every year heightens the urgency for relief. Expeditious progress is essential.

FOOTNOTES

[1] The Army Corps of Engineers reports river shipments of Ohio coal in 1986 at 19.7 million tons. The U. S. Dept. of Energy reports an average value at the mine of $32.80 per ton.

[2] The ratio of local income to mine value (.634) as reported by the Kentucky Coal Association, "Coal and the Kentucky Economy", Lexington, Kentucky, 1983.

[3] The ten counties are: Belmont, Coshocton, Harrison, Jefferson, Meigs, Monroe, Noble, Perry, Tuscarawas, and Vinton. The riverborne coal their mines originated had an estimated mine value of $522.7 million (80.9 percent of the state total), of which about $331.4 million was direct local income. At a "multiplier" effect of 2.0, an income may be inferred averaging $5,675 for each of the 116,793 households in the ten counties. (Number of households per U. S. Bureau of the Census.)

[4] U. S. Dept. of Energy, Energy Information Administration, Coal Distribution, January-December, 1986, Table 18.

[5] Mine values at $32.80 per ton, Ohio average, 1986, as reported by the U. S. Dept. of Energy.

ATTACHMENT III

THE IMPORTANCE OF THE THE OHIO RIVER NAVIGATION SYSTEM TO THE THE ELECTRIC POWER INDUSTRY

A program for replacement or modernization of old lock-and-dam structures on the Ohio River and its navigable tributaries (the "Ohio River System") is now under way. It is important to the region directly served and to critical national objectives that this program be sustained at the full capability of the Army Corps of Engineers.

The System, consisting of the main stream of the Ohio and the navigable reaches of its tributaries, comprises 2,281 miles of interconnecting waterways with a minimum depth of nine feet or more. It plays a central role in the economy of the entire Ohio Basin, extending from Pittsburgh westerly to its confluence with the Mississippi and from northern Ohio and Indiana southward into northern Alabama.

Low-cost waterborne carriage on the System sustains a number of major industries. Among these, electric energy is of pervasive importance. The Ohio River Basin is blessed with an abundance of coal reserves, providing fuel for one of the largest concentrations of thermal generating stations in the nation, a concentration supplemented by numerous navigation-related hydropower stations. The coal is transferred from the mines to river terminals for the waterborne haul to riverside power plants. The average coal haul on the shallow-draft inland waterways of the United States in 1987 was 428 miles. Most of this was on the Ohio River System.

The nation's petroleum imports are now rising, with disturbing implications as to foreign policy and national security. The North American Electric Reliability Council, the utility industry's planning arm, estimates that about 101,000 megawatts of additional generating capacity will have to come into service nationwide by the year 2000. Other authoritative forecasts are higher, representing an expansion of some ten to fifteen percent. It is thus urgently in the national interest that much of this expansion take place on the banks of the Ohio River System, utilizing the abundant and internally secure domestic coal reserves and minimizing reliance on imported fuels. A fully modern and efficient navigation system is integral with this objective.

LOW COST OF WATERWAY-BASED ELECTRIC ENERGY

The thermal generating plants on the banks of the System consume coal almost exclusively. The Army Corps of Engineers reports that about 78 percent of all the waterborne coal moved on the System is consigned to electric power plants, the remainder to steel and other industries and for export. On this basis, it may be estimated that the riverside plants received about 82.9 million tons of waterborne coal in 1987, or just short of 75 percent of their total consumption. The remainder was received via land modes, usually for short distances and at water-competitive rail and trucking rates.

The unmatched low cost of river barging, especially of dry bulk commodities, constitutes an enormous saving in the cost of electricity. The typical barging rate per ton of coal in 1899 was only four miles per mile. (A mill is one-tenth of a cent.) At this rate, a ton of coal could be hauled 60 miles by river barge for less than the cost of a first-class postage stamp (25 cents). For uncontracted haulage, shippers sometimes had to pay "spot rates", as much as 50 percent higher. At this rate, the charge for hauling an average ton of coal 75 miles would be about the same as the U.S. postage on a two-ounce letter.

This transportation bargain converts itself into a lower cost of fuel at the power plant and of electricity for industries, farms, and households. In 1987, the average fuel cost at fossil-fueled power plants in the United States was 18.4 miles per kilowatt-hour. For plants on the Ohio River System it was only 14.3 mills. These riverside plants generated over 286.4 billion kilowatt-hours in 1987 at an aggregate fuel cost saving in this one year of about $1.17 billion as compared with the national average. As a measure of magnitude, this was equivalent to about $119.00 for each of the 9.8 million households in the Ohio Basin. Actually, of course, much of the saving took the form of low rates to major industries, commercial establishments, and farms, thereby serving as a stimulus to production, employment, and incomes.

LIMITATIONS OF MINE-MOUTH PLANT LOCATION

Power plant location at the mine mouth has sometimes been heralded as an alternative to transportation of fuel. Such a location, of course, would usually involve a longer-distance transmission of electricity to service areas. It is, however, an alternative for only a limited number of mine locations. For one thing, power plants need an abundant water supply, often lacking at mine sites. Furthermore, the fuel requirements of a large thermal plant commonly exceed the capacity of any one mine of suitable location and coal quality. Finally, to meet standards of efficiency and environmental objectives, it is usual for a power plant to blend coals from a variety of sources. Siting on the banks of the Ohio River System accommodates these constraints at minimum cost.

Diversity of Origins of Waterborne Coal

The low fuel cost combines with the river-based abundant and stable water supply to identify the electric utility industry of the Ohio River System as the "National Power Production Region". River barging is intensely competitive, so that each riverside power plant has a wide choice of carriers, assuring low charges and high standards of service. In addition, low waterway costs exert a firm restraint on competitive railroad and trucking rates.

The Ohio River System, supplemented by the Mississippi, provides the utilities with a wide variety of coal analyses for optimum power generation and environmental protection. The river system interlaces the Appalachian coal fields, extending from Western Pennsylvania, West Virginia, Ohio, and Indiana on the north, south through Kentucky and Tennessee into northern Alabama, and west to embrace the western Kentucky and Illinois fields. Every waterway carrier enjoys unimpeded access, without transshipment, to all sectors of this extensive region.

In addition, low-sulfur western coal, mainly from Wyoming, enjoys good rail-water connections near the confulence of the Mississippi and Ohio Rivers for waterborne delivery in the Ohio Basin, supplementing the low-sulfur coals of West Virginia and eastern Kentucky.

Abundant and Stable Water Supply

The designation of the river-based utilities as the "National Power Production Center" is enhanced by the navigation-related abundance and stability of water supply. Power plants require lots of water, but do not consume it in significant amounts. About 98 or 99 percent of all the water they withdraw from the stream is subsequently discharged into the same stream and, with suitable treatment (mainly for temperature control) is thus made available for reuse by other industries and communities. These large-volume withdrawals mandate that the plant be located for a water supply which is not only plentiful but also dependable.

The navigation works on the Ohio River and its tributaries, some of which have been in service since the early years of the century, supplemented by upstream reservoirs, meet this need. In its uncontrolled state, the flow of the Upper Ohio River near Pittsburgh varied between a high of 557,000 and a low of 1,300 cubic feet per second, a ratio of 428:1. In the lower river, near Paducah, Kentucky, this ratio was about 80:1. During extremely high water, disastrous floods swept through the streets of Pittsburgh and Cincinnati. During low water, men waded across the river via the semi-stagnant pools in the river bed. Obviously, water intakes, if low enough to be always below the surface, in time of low water would draw sand and other bottom sediments into the power plant, while exhausting the supply of cool water in the depleted river.

The navigation dams solve this problem. Their main function is to maintain a navigable channel depth of at least nine feet, and most of the reaches of the navigable rivers permanently exceed this depth. In addition, the impoundments backed up by the dams assure sufficient volumes of water for the cooling function.

The navigation dams are supplemented by numerous non-navigable upstream storage reservoirs, or man-made lakes, on the many smaller tributaries above the head of navigation. In the late 1980's, there were 77 of these reservoirs throughout the basin. Among other purposes, important functions of these works include the complementary objectives of flood control and the augmentation of low flows in the downstream navigable reaches during dry seasons. During high-water periods, these reservoirs impound and hold great quantities of precipitation and runoff, saving downstream cities and rural communities from serious flood damage. Conversely, in dry seasons, releases from the reservoirs augment the rate of flow in the downstream navigable reaches, enhancing the river's current in a manner conducive to improved usability for electric utilities, as well as for other industries and commercial and residential communities. The upstream reservoirs thus complement the function of the navigation dams by permitting maintenances of the nine-foot channel without unacceptable stagnation of current. The Army Corps of Engineers reports that, during the drought of 1989, such releases increased the flow of the Ohio River at Cincinnati by 40 percent.

WATERBASED ELECTRIC ENERGY WITHIN AND BEYOND THE OHIO BASIN

On this foundation, electric power has become a specialization of the region, like corn in Iowa or orange juice in Florida. In 1987, the counties on the banks of the Ohio River System in the eight states the System serves had a population of 4.1 percent of the U.S. total. This includes such metropolitan areas as Pittsburgh, Cincinnati, Louisville, and Nashville, in addition to a large number of smaller communities. With only 4.1 percent of the nation's population, waterside electric plants in these counties produced 11.1 percent of the nation's electric power.

Navigation on the Ohio River System also supplies coal to generating stations outside the Basin. In 1987, some 12.5 million tons were carried all-water to plants on the Gulf Coast between New Orleans and Tampa, Florida. An additional 9.3 million moved all-water to plants on the Mississippi and Illinois Rivers, large tonnages of this to Memphis and Chicago.

Cargo originated by barge on the System was transferred at barge-to-rail terminals for delivery to power plants in north and central Georgia, to plants in Maryland, and via rail and lake to eastern Canada. All of this coal had to work its way through antiquated and run-down lockage structures on the originating streams.

PETROLEUM IMPORT EQUIVALENTS

The efficient transportation of Ohio River coal bears on U.S. foreign policy and national security. As petroleum consumption continues to mount, we are moving again into an era when most of the country's petroleum will have to be imported, raising the spectre of a return to the disruptions of the OPEC period and reliance of the nation's economy on the politically volatile Middle East. The coastal region is especially vulnerable to reliance on imported petroleum fuels.

The Ohio Basin coal shipped by water to generating plants on the banks of the Ohio River System in 1987 had a Btu content equivalent to 310.9 million barrels of petroleum fuels, that waterborne to Gulf utilities 46.8 million barrels, and that to power plants on the Mississippi and Illinois Rivers, about 34.9 million barrels. The three combined were equal to some 16.1 percent of the total U.S. importation of crude oil and petroleum products in 1987. The modernization of the navigation system carrying Ohio Basin coal to electric generating plants thus translates itself into a move towards energy independence with its overtones as to a strenghtened foreign policy and national security.

PERCENTAGES OF OHIO RIVER SYSTEM ENERGY TO STATE TOTALS

We have referred previously to the percentage of the System's electricity output to the national total. Its dominance in the supply in individual Ohio Basin states is even more striking. The System's riverside counties in Ohio, for example, are home to only 15.6 percent of the state's population. But, in 1987, their waterside plants generated 68.7 percent of Ohio's electricity. Only 10.0 percent of Hoosiers live in counties bordering the Ohio River. But, these counties produced 35.5 percent of Indiana's electricity. In Alabama, the corresponding percentages are 18.0 for population (on the Tennessee River) and 25.0 for electric power.

West Virginia is preeminently a river state. Three navigable rivers either adjoin or lie within West Virginia, and 50.3 percent of the people live in counties. In 1987, these produced 64.5 percent of the state's electric energy.

Tennessee, also a river state, is served by two navigable tributaries of the Ohio. The riverside Tennessee counties are home to 36.9 percent of the state's population and, in 1987, produced 71.4 percent of the state's electricity. (This does not include Memphis on the Mississippi.)

MAGNITUDES OF STEAM POWER AND HYDRO POWER

Practically all the electric energy generated in Tennessee is produced by public agencies, either the Army Corps of Engineers or the Tennessee Valley Authority. Most of this output is from steam plants, the TVA having grown far beyond its one time main dedication to hydro power. Throughout the remainder of the Ohio River System, however, almost all the electric energy, something over 75.0 percent of the System's total, is produced by investor-owned utilities.

The figures cited include hydro power produced on the navigable reaches of these rivers, only 4.6 percent of the System total, and mainly on the Tennessee and the Cumberland. Some additional hydro power is now being developed at several of the large navigation locks-and-dams on the main stream of the Ohio.

Hydro power is a joint product of navigation. It is especially advantageous because of its low cost, its security as a domestic energy resource, and its environmental advantages. These are largely attributable to the navigation system. The multiple-purpose character of the dams on the Tennessee and the Cumberland include navigation and hydro power as joint benefits, the navigation function thereby establishing hydro power's economic feasibility. On the Ohio, the new hydro power works are a direct by-product of structures built mainly for navigation.

SERVICE AREAS OUTSIDE OF THE OHIO VALLEY

The power plants, both thermal and hydro, on the Ohio River System serve widespread inland populations and industries, many located far from the rivers. For example, in Ohio, such non-river cities as Columbus, Dayton, and Canton rely on the distant riverside stations for large portions of their energy supply. One large utility reports that, in a recent year, over 75.0 percent of the capacity of major riverside stations was utilized to serve remote-load areas via transmission lines ranging from 138 to 765 Kilovolts. At times, generating stations on the System's banks have provided backup power via long-distance, high-voltage inter-connections, to avert outages in cities as remote as New York, Detroit, and Roanoke.

HIGH UTILIZATION OF CAPACITY

The power plants on the Ohio River System are also remarkable for their high rate of capacity utilization. Consumer advocates have frequently complained that utility rates include too much cost recovery on unused plants. Whatever the merits of such complaint in particular cases, it has no validity with respect to the Ohio Valley plants. In 1987, the power plants on the banks of the Ohio River System generated 4,684 kilowatt-hours per kilowatt of capacity. The per-kilowatt output of all other plants in the U.S. was only 3,480 kilowatt-hours and of the non-riverside plants in the eight states directly served by the Ohio River System, only 3,396. The distinctively high rate of utilization by the riverside plants presumably reflects their base-load function as low-cost facilities combined with superior husbandry of power supply by energy-intensive industries. The savings to the consumer of low-cost fuel at the plant are thus enhanced by the minimization of excess capacity without sacrifice of reliability.

OHIO BASIN ENERGY-INTENSIVE INDUSTRIES

The low cost and abundance of electricity in the Ohio Valley underlies much of the region's industrial strength, especially for industries which are energy-intensive. Aluminum smelting, an electrolytic process, is especially notable. Major concentrations of chemical plants, also energy intensive, are located in the eastern Ohio Basin and the Tennessee Valley. According to the American Iron and Steel Institute, the steel produced by electric furnaces in the U.S. increased from 24.9 percent of the total in 1979 to 36.9 percent in 1988, a change associated with the increasing strength of the domestic industry in international competition.

The emerging industrial renaissance of the Northeast Quadrant of the United States includes an increasing element of newer high-technology, energy-intensive industries utilizing, for example, robotics in the motor vehicle, machinery, and appliance industries. Advanced food processing industries and computer technology are additional illustrations. American farming has become an energy-intensive industry, relying on an abundance of electric energy for powered machinery as well as floodlighting of outdoor work areas and of the interior of large structures. By means of these utilizations, the electric power of the Ohio Valley supports an extensive complex of basic industry enhancing the strength of the national economy in international competition, an asset of nationwide benefit. The efficient carriage of coal on the Ohio River System is a central feature of this role.

BENEFITS TO RAILROADS

The region's railroads also benefit considerably from the rail-water traffic. Most of the waterborne coal on the System originates or terminates by rail. For example, the largest coal shipping port on the Ohio River System is Huntington, West Virginia. Major coal-producing counties tributary to Huntington (Mingo, Boone, and Logan) are up the Big Sandy Valley, 75 or more rail miles from Huntington. Ohio Basin low-sulfur coal has been carried by barge on the Ohio River System to the Duquesne Wharf in Pittsburgh for transfer by Conrail and overland carriage to Maryland plants of the Baltimore Gas and Electric Co. The Norfolk Southern Railway operates a barge-to-rail terminal on the Tennessee River at Pride, Alabama, for receipt of waterborne Ohio Basin coal and transfer for rail delivery to plants of the Georgia Power Co. in north and central Georgia. Coal is also carried downstream on the Monongahela to Pittsburgh for further movement via rail and lake to Canadian generating stations. Examples could be multiplied.

The rail-water and water-rail linkages are a net benefit to the railroads. In the absence of low-cost waterway carriage, much of the alternative energy supply would take the form of fuel oil and natural gas, neither of which are carried in significant quantities by railroads. In 1987, only 2.6 percent of all the ton-miles of petroleum products moved in the United States were carried by railroads.

THE CLEAN-COAL PROGRAM

Critics have called coal a "dirty fuel", particularly with respect to stack emissions containing sulfur dioxide and nitrogen oxides, raising the issue called "acid rain" with injury to forests, wild life, and human health. Whatever the validity of these concerns, they are rapidly being laid to rest by the cleansing of coal. Increased use of the large low-sulfur reserves of the Ohio Basin is well under way. While the total coal movement on the Ohio River System increased during the ten years ending in 1987 by 32.9 percent, the originations in the low-sulfur areas of the Kanawha and Big Sandy Valleys multiplied over three-fold, an increase of 270 percent.

New clean-coal technologies are making rapid progress. The American Electric Power Co. has taken the process of pressurized, fluidized bed combustion (PFBC) out of the laboratory and is bringing a 70,000-kilowatt demonstration plant into service at Brilliant, Ohio, scheduled to open in July, 1990. This project looks toward completion in 1995 of the first commercial-sized PFBC plant of 330,000-kilowatt capacity at the Philip Sporn plant on the Ohio River in West Virginia. The PFBC technology eliminates 90 percent of the sulfur dioxide and 50 percent of the nitrogen oxide, while raising the electricity generated per Btu of fuel by 10 percent.

Meanwhile, the U.S Department of Energy has instituted a program of public-private investment in the amount of $1.3 billion. Under this program, the Ohio Edison Company is constructing a $66.2 million demonstration project at the Niles Station. This project incorporates a technology identified as NOXSO, with the prospect upon successful development of eliminating 97 percent of the sulfur dioxide and 50 percent of the nitrogen oxide. The Dayton Power and Light Company is undertaking a similar project at Aberdeen, Ohio on the Ohio River.

These processes along with many ofther multi-million dollar clean coal projects are now well beyond the laboratory stage, and the willingness of government and industry executives to commit such large sums to their incorporation into the system leaves little doubt as to their prospective success. It appears that by the end of the century, coal will have become a genuinely clean fuel.

THE CONSEQUENCES OF DELAY - THE EXAMPLE OF LOCKS NO. 26

The run-down and antiquated navigation structures of the Ohio River System are still moving traffic, at least efficiently enough to sustain the low-cost movement of coal during most of the 1990's. But, some are getting to be serious bottlenecks and cannot last much longer. Lead times for replacement are long--anywhere from five to ten years.

Something of the potentials of neglect is evident in recent experience on the Mississippi. A construction start to replace old Locks and Dam No. 26, near Alton, Illinois, was scheduled for 1974. Action was delayed, however, for some years by litigation. With the replacement not yet completed in 1989, a breakdown of a worn-out lock gate on the old structure led to the formation of a queue of cargo-laden vessels 40-miles long, each stalled for some six to seven days. An immobilized tow of barges, with its crew, represents a cost of $300 an hour or more, and the cost of a six-day wait for lock access would thus mount to something over $40,000 per tow.

Such a crisis, or worse, a series of such crises on the Ohio River and its tributaries at the turn of the century would emasculate the rich energy logistics of the Ohio River System electric power industry, with somber implications for U.S. energy supply and national security. There is no time to lose.

Mr. Myers. Mr. Chairman I have a question.

Mr. Bevill. Go right ahead.

Mr. Myers. I understood you to say that Olmsted Dam had a benefit to cost ratio of 25 to 1

Mr. Palmer. That is right, Mr. Chairman. If that project were not there, it needed to be today, we have 87 million tons of commerce moving through that stretch of the river.

The problem is that the additional money is needed so that we don't delay this project for another year. That is to the year 2006. The way the Corps accounts for this stuff, Mr. Chairman, we just need to get this project under construction.

Mr. Myers. I am somewhat familiar with that because a lot of Indiana coal goes through locks 52 and 53. We had a discussion yesterday of new information that I was somewhat familiar with that 60 to 90 percent of the time tows could go across the dams at the two facilities without lockage.

Mr. Palmer. At the lock and dam 52, because of the river conditions, the dam is down 58 percent of the time and at 53 it is 90 percent of the time. The problem is not at high river. The problem occurs when you have to use the dam and build a pool there.

So you have back ups of tows in both directions getting through.

Mr. Myers. Did you say 90 percent of the 87 million tons or 90 percent of the time? There is a difference. They might go through the navigable pass at the time when we don't have a lot of tonnage going through.

Mr. Palmer. The traffic is pretty steady throughout the time. There is not one time of the year there is more traffic or less traffic. It is well traveled throughout the year.

Mr. Lehman. Mr. Myers, what you are looking at is very deteriorated structures in that area in addition to the tonnage. The Corps have pumped thousands of tons of rock because of the undercutting of the structure.

Mr. Myers. Are you talking about Lock 52 or 53?

Mr. Lehman. Both of them, the trap got in such deteriorated shape they had to rock it in entirely. Where the cargo goes over those structures are very deteriorated. In private conversations, many Corps operating people down there told me they are not sure it can be maintained.

The temporary locks, the lock at 53 down there now was built in 1969 with an estimated life of 15 years.

It is now 21 years old. If we go on the schedule with no deterioration on the schedule the Corps laid out, that structure is going to be 36 years old. It will take extensive maintenance—if it can be maintained. If it is not maintained, you are talking about shutting off the whole gateway to the Ohio Valley.

As Mrs. Boggs surely knows, outside of Kentucky, the State of Louisiana moves more products through the Olmsted area where the project will be. There is no way that we can continue if we don't do this work.

Mr. Myers. I was left with the impression yesterday that there might not be the same sense of urgency about the Olmsted project. You are a navigator. How necessary is it that we get on with that right away?

Mr. LEHMAN. It is vitally necessary. I have felt the Olmsted project is the most important project in the United States, more than the second lock at 26, more than the Gallopolis Lock. It is the most important project.

Mr. PALMER. From an economical development point of view, Frank.

Mr. MARTIN. I want to say that we will be coming out of the Rust Belt Era, and it is somewhat of an embarrassment. We did the new Corps project at $5 million. We are close to a project in southern Indiana, northern Kentucky. They asked me Monday, what is going to be done at Olmsted with the delays, the deterioration, and the 60-year old facility. It is really critical.

I cannot say enough to support what Mr. Lehman is saying. I consider it the highest priority. I know we have limited dollars.

THURSDAY, MARCH 29, 1990.

BUDGET REQUEST FOR COE, TVA, BOR AND FERC

WITNESSES

R. MAX PETERSON, EXECUTIVE VICE PRESIDENT, INTERNATIONAL ASSOCIATION OF FISH AND WILDLIFE AGENCIES

Mr. BEVILL. Mr. Peterson, we can give you two minutes now or you can come back. We will go vote and then come back and give you five.

Mr. PETERSON. I will take two. I wanted to thank you for your help in the acquisition of land. I know Charley was here talking to you about that. We sincerely appreciate your help. With my previous hat as Chief of the Forest Service, I know most of the Members of this subcommittee. Today I appear as the Vice President of the International Association of Fish and Wildlife, a 50-state fish and wildlife agency. We are delighted to see the improvement in the Corps of Engineers, TVA and the Bureau of Reclamation budgets as it relates to fish and wildlife. We support the increase in the Corps of Engineers budget for that type of work. We point out the need for additional money for interagency coordination for the National Estuary Program. These are small amounts of money but they are very important.

We are concerned that the projects will not continue unless we begin some work. We would like the subcommittee to figure out a way to prevent that lapse from occurring. We think the mitigation that was promised in those projects is a promise that ought not evaporate because the time ran out. I don't know how we do that but I think it is critically important to keep faith with the people who supported the projects.

We are happy to see the improvement in the Bureau of Reclamation budget. We have some suggestions there we would like to look at, typically such things as the reservoir operating program.

Thank you, Mr. Chairman, for your time.

Mr. **Bevill**. Thank you, very much.

Your entire statement will be made a part of the record. We will stand in 10-minute recess so we can go vote.

[Recess.]

[The statement of R. Max Peterson follows:]

International Association of Fish and Wildlife Agencies

I.A.F.W.A.

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R. Max Peterson, Executive Vice President

Testimony before the Appropriations Subcommittee
on Energy and Water Development
on the FY 1991 budget proposals for the
U.S. Army Corps of Engineers, Bureau of Reclamation,
and Tennessee Valley Authority

by
R. Max Peterson, Executive Vice-President
29 March 1990

Mr. Chairman and members of the Energy and Water Development Subcommittee, the International Association of Fish and Wildlife Agencies appreciates the opportunity to testify before your subcommittee on the FY 1991 budgets of the U.S. Army Corps of Engineers, Bureau of Reclamation, Tennessee Valley Authority, and Federal Energy Regulatory Commission. It is in the spirit of cooperative, multiple resource management that the Association comments on these agencies' budgets.

The International Association of Fish and Wildlife Agencies, founded in 1902, is a quasi-governmental organization of public agencies charged with the protection and management of North America's fish and wildlife resources. The Association's governmental members include the fish and wildlife agencies of the states, provinces, and federal governments of the U.S., Canada, and Mexico. All 50 states are members. The Association has been a key organization in promoting sound resource management and strengthening federal, state, and private cooperation in protecting and managing fish and wildlife and their habitats in the public interest.

U.S. ARMY CORPS OF ENGINEERS (Corps)

The Administration's FY 1991 Army Corps of Engineers budget recognizes the Corps' important multiple resource management responsibilities. The Association welcomes the opportunity to support the Corps budget request for many environmental maintenance and restoration projects as this budget shows a marked improvement over past years for natural resource protection and enhancement and for fish and wildlife management. Under the Corps Operations and Maintenance account, the Association recommends adequate funding for fish and wildlife management programs nationwide. Corps lands and projects include millions of acres of fish and wildlife habitat; it is imperative that funding be provided so that these lands can be cooperatively managed to best benefit the Nation's natural resources.

The Corps Environmental Maintenance and Restoration account contains a number of projects benefitting fish and wildlife. The Administration has requested $200,000 for interagency coordination on the National Estuary Program and $200,000 for North American Waterfowl Management Plan coordination. The Association supports Corps funding for important interagency coordination for these initiatives, and recommends the addition of $520,000 to enhance North American Waterfowl Management Plan coordination. Corps managed lands and waters have significant opportunities for projects which enhance waterfowl habitat.

Section 601 of the Water Resources Development Act authorizes fish and wildlife mitigation for 14 Corps water resources development projects. These mitigation projects will be deauthorized if no funding is provided in five years. The Association recommends sufficient funding so that no projects are deauthorized without necessary mitigation work being done. We are pleased that the FY 1991 budget provided partial funding for wildlife mitigation work on the Tennessee-Tombigbee Waterway. The Association recommends continuing the Tennessee-Tombigbee mitigation effort in FY 1991 at $20.0 million. The Association also recommends funding wildlife mitigation work at the Richard B. Russell Dam in South Carolina and Georgia at $20.2 million. This funding would complete mitigation work at this location.

The Association proposes $15.8 million for juvenile fish mitigation work on the Columbia River in Washington, Oregon and Idaho. The Association supports this effort but recommends downstream fish passage mechanisms that provide unimpeded movement of juvenile salmons, rather than physically moving fish around dams. This juvenile fish mitigation effort originally included studies for the Galloway Dam on the Weiser River in Idaho. This project would store sufficient water to maintain instream flows adequate for downstream movement of salmonid juveniles. The Association recommends that funding be provided to complete the feasibility study for the Galloway Dam project.

The number and variety of Corps projects requiring mitigation is not readily available in Corps budget documentation. The Association recommends that Congress require the Corps provide a status report of all mitigation projects including estimated project costs and applicable deauthorization dates. Such a report would greatly assist in working toward President Bush's goal of "no net loss" of wetlands.

The Administration proposes $3.0 million for a Wetland Research Program to improve the Corps' ability to delineate and evaluate wetlands, quantify critical wetland processes, develop wetland restoration protocols, assess wetland change and develop wetland stewardship functions within the Corps. The Association recommends an addition of $3.0 million for this effort to more rapidly allow the Corps' assistance in achieving President Bush's wetlands goal.

The Glenn-Colusa Irrigation District project in California incorporates a fish screen that has been rendered ineffective by changes in riverbed elevation. Ongoing hydraulic studies by the Corps must be completed to prevent loss of milliions of juvenile salmon annually, including the endangered winter run chinook. The Association recommends the addition of $650,000 to continue hydraulic studies at the Glenn-Colusa Irrigation District followed by installation of remedial facilities as soon as possible.

The Sacramento River Bank protection effort in California contains a number of components in need of additional funding in FY 1991. The Cache Slough and Feather River projects are intended to restore lost riparian habitat by recontouring land and planting vegetation. The Administration budget contains only $130,000 for the projects. The Association recommends that $200,000 be spent on this effort, an addition of $70,000 to the Administration request. River bank protection along miles 60-140 includes mitigation for bank swallow habitat, protection of winter run chinook habitat, restoration of Swainson's hawk habitat, and riparian vegetation restoration. The Administration requests $110,000 for this work. The Association recommends the addition of $240,000 to conduct Sacramento River Bank protection.

BUREAU OF RECLAMATION (BOR)

The Association applauds two new initiatives in the Bureau of Reclamation FY 1991 budget request -- the $2 million construction appropriation for Wetlands Development and the $525,000 Operations and Maintenance appropriation for Administration of Recreation and Fish and Wildlife Initiatives. These initiatives, done cooperatively with state fish and wildlife agencies, should enhance fish and wildlife values on BOR projects. The BOR volunteer program should be further developed to increase fish and wildlife benefits.

The Association recommends that BOR seek the authority to move from a mitigation program into habitat enhancement programs. This authority will allow the BOR to address projects with finished mitigation that is inadequate, such as California's Trinity River. Further, a mechanism is needed to allow BOR to address specific resource problems, such as the problems associated with wintering Trumpeter swans in Idaho. BOR must follow through with concurrent mitigation of habitat impacts associated with construction activity to avoid development of a mitigation backlog as concurrent mitigation is essential to avoid lost opportunity costs. The Association recommends that funding be provided to eliminate the existing mitigation backlog.

Funding needs to be provided for several specific projects. The Salton Sea Restoration Research Project in California is not included in this budget. The Association recommends the addition of $995,000 to begin a three-year project to construct a research facility proposed by the Salton Sea Task Force. This project is critical to save an important Pacific Flyway Waterfowl wintering area and wetland, and a major sport fishery.

Design work for the Shasta Dam Temperature Control Device is nearly complete and the Association recommends that funding be provided to begin construction. This device is essential to mitigate for the dam's impact upon the Sacramento River salmon fishery. Every year this device is not in place costs the Bureau over $4 million in lost power generation due to temporary mitigation bypass measures which do not fully address fishery needs.

The Association supports the Bureau's funding of the Trinity River Restoration Program and applauds the Bureau's continued work on this valuable fishery resource.

The Association recommends that the Bureau provide operation and maintenance funding for the Sacramento-San Joaquin Bay Delta Studies Program. This funding is important in light of ongoing hearings on water quality and flow standards in California.

The Association urges that the Umatilla Project be implemented as quickly as possible. This project will provide substantial returns in anadromous fisheries from a relatively small investment.

The Administration budget proposal did not include funding for the Garrison Diversion Reconstituted Project in North Dakota, a project with a long, controversial history. A 1986 agreement between the federal government, State of North Dakota, and several conservation groups reflects a compromise reconstituted Garrison Project. In keeping with that agreement, the Association recommends $35 million for FY 1991 work on the Garrison Diversion Reconstituted Project.

TENNESSEE VALLEY AUTHORITY (TVA)

The Association commends the Administration for an increased TVA budget over last year. In particular, the proposed budget increases will allow the Tennessee Valley Authority to more adequately manage its fish and wildlife resources. However, the $63 million budget proposed by the Administration is still inadequate for a number of TVA responsibilities. Therefore, the Association recommends that Congress fund TVA's natural resource program at $76 million in FY 1991, $13 million more than the President's recommendation.

The Association believes that the $9.986 million Natural Resources Capital Program budget request is inadequate for many program tasks such as Land Between the Lakes (LBL) developments, endangered species monitoring, dam safety conformance, rehabilitation work, and other natural resource management projects. The Association recommends an additional $5.6 million to accomplish these tasks.

Reservoir System Operation is among the most important of TVA's overall program. Proper management is critical to fish, wildlife and recreation management. The Association is particularly concerned that TVA have adequate funds to conduct an aquatic weed control program which gives serious consideration to fish and wildlife resources dependent upon aquatic weeds. The Association therefore recommends that the President's budget of $6.3 million be increased to $10.6 million to accomplish these programs.

The Water Resources Program includes water quality monitoring, watershed analysis, pollution control, dissolved oxygen improvements, minimum flow, aerial inventory, and air quality activities. The Association supports the proposed budget of $6.3 million for the Water Resources Program.

The Land and Forest Resources component is important for fish and wildlife management and includes watershed reclamation, reservoir management, and forest and wildlife management. The proposed budget of $3.9 million is inadequate to carry out these activities. Therefore, the Association recommends an increase of $1.6 million for a total of $5.5 million for Land and Forest Resources.

Land Between the Lakes provides enormous opportunities for fish and wildlife recreation and management, with over 3 million user-days per year. The proposed FY 1991 budget of $8 million is insufficient to adequately manage LBL and could result in a substantial loss of recreational user-days. The Association recommends that the LBL budget be increased by $820,000, to $8.797 million, to adequately address the management needs of this important fish and wildlife recreation area. This would rebalance stewardship and operations funding, restore national demonstrations and allow for full realization of the diverse benefits to be gained from LBL.

In summary, the Association is pleased with the direction indicated by the FY 1991 budgets of the Corps of Engineers, Bureau of Reclamation, and Tennessee Valley Authority. However, the budget additions we recommend would allow these agencies to more rapidly enhance their natural resource management capabilities, including cooperative state/federal management, riparian zone management, and wetlands protection. The net result of this will be sound management and increased recreational opportunities for the citizens of our Nation.

THURSDAY, MARCH 29, 1990.

COLORADO PROJECTS

WITNESS

J. WILLIAM McDONALD, DIRECTOR, COLORADO WATER CONSERVATION BOARD

Mr. **MYERS** [presiding]. The committee will come to order.

We apologize that we are running a little behind schedule here but we do not control activity on the House Floor.

We just had to go over and vote. The Chairman will be back shortly.

Mr. McDonald, your entire statement will be put in the record. You may summarize.

Mr. **McDONALD**. I will be pleased to do so.

Your staff told me I owe them two minutes from last year.

It is my pleasure to appear on behalf of Governor Roy Romer and the Colorado Conservation Board. I will make three points. First, the State of Colorado supports in every regard the President's budget request for the Corps of Engineers and Bureau of Reclamation request in Colorado.

Our sole recommendation to you is a request that the committee recommend the sums contained in the President's budget request. In the last four or five years Colorado has struggled with significant cost sharing problems, with an Indian settlement that is wrapped around a couple of projects and some requirements from the Bureau of Reclamation that we effect some projects that will allow the projects to go forward.

We have accomplished all those things. Every dime of the money is in the bank. It has been appropriated by our General Assembly. We have an Indian assembly. We have taken care of the ownership things that have enabled the project to go forward. We appreciate your support. We have brought several projects to the point where they are ready to be completed.

The last big one is underway. We are very much appreciative of the help you have given us.

Mr. **MYERS**. Thank you. The rest of the committee, of course, will see your statement in the record.

[The statement of the State of Colorado follows:]

STATEMENT OF
THE STATE OF COLORADO

BEFORE THE
ENERGY AND WATER DEVELOPMENT SUBCOMMITTEES
COMMITTEES ON APPROPRIATIONS
UNITED STATES SENATE AND HOUSE OF REPRESENTATIVES

ON FY 1991 APPROPRIATIONS FOR
BUREAU OF RECLAMATION AND CORPS OF ENGINEERS PROJECTS
IN COLORADO

Washington, D.C.
March 29, 1990

Summary of Requests

Colorado supports the President's budget request for Bureau of Reclamation and Corps of Engineers projects in our state. We respectfully request that Congress appropriate all of the sums set forth in the President's budget.

Introduction

This statement is submitted by the Honorable Roy Romer, Governor of Colorado; Mr. Hamlet J. Barry, III, Executive Director of the Colorado Department of Natural Resources; and the Colorado Water Conservation Board, which is the state agency charged with the development of Colorado's water resources.

Bureau of Reclamation (Construction Program)

Animas-La Plata Project. This is a joint Colorado-New Mexico project designed, among other things, to address the water supply problems which confront the Indian reservations in the project area. Other components of the project will serve non-Indian populations in Colorado and New Mexico with municipal water. Finally, project water will significantly strengthen the agricultural economy of southwestern Colorado.

In December, 1986, the United States, State of Colorado, Ute Mountain Ute Tribe, Southern Ute Tribe, and non-Indian water users in southwestern Colorado entered into an agreement settling the Tribes' long-standing reserved water rights claims, thereby avoiding costly and divisive litigation. The necessary implementing legislation--the Colorado Ute Indian Water Rights Settlement Act (P.L. 100-585)--was enacted in 1988.

The settlement has three major components:

(i) The delivery to the Tribes of water from the Animas-La Plata and Dolores Projects and the quantification of additional water for the Tribes on various streams,

(ii) The establishment of Tribal development funds to assist the Tribes in making their reservations economically self-sufficient, and

(iii) The waiver by the Tribes of all of their reserved water rights claims.

The linch pin of the settlement is the provision of water to the two Tribes from the Dolores Project, which is nearing completion, and the Animas-La Plata Project, which did not receive its first construction appropriation until FY 1986 even though it was authorized by Congress in 1968 and was to have been built concurrently with the first delivery of water to the Central Arizona Project. The additional water provided by these projects will permit the continuance of non-Indian economies dependent upon existing water supplies, while simultaneously providing the Tribes with water.

In light of the importance of the Animas-La Plata Project to the settlement, the State of Colorado and local water users have agreed to non-federally finance 38 percent of the cost of the project. Colorado has already appropriated all of the money which it is obligated to provide and has executed all necessary escrow agreements and contracts with the Bureau of Reclamation.

As part of these cost-sharing arrangements, the Department of the Interior has committed to a 12-year construction schedule for the project. Failure to meet that schedule could unravel the settlement agreement as it pertains to two of the rivers involved.

To achieve this schedule, we believe that every dollar of the President's budget request for $13.4 million is needed. We ask Congress to continue its commitment to this project, the Tribes, and the state by appropriating the funds needed to maintain the 12-year construction schedule.

Other On-Going Projects. We urge Congress to maintain the funding requested by the President for construction on three other on-going projects--the Closed Basin, Dolores, and Fryingpan-Arkansas Projects. Each of these is nearing completion and should be a high priority for funding. Furthermore, the Closed Basin Project will benefit both New Mexico and Texas and, as mentioned above, the Dolores Project is an integral component of the Ute Indian water rights settlement.

With respect to the Closed Basin Project, the cost-sharing required by amendatory legislation passed in 1988 was consummated in June, 1989, with the execution of an agreement between the Bureau of Reclamation and the Colorado Water Conservation Board. All funds required of Colorado have been appropriated by the state legislature and are committed by the subject agreement.

Bureau of Reclamation (Colorado River Salinity Program)

The seven states of the Colorado River Basin have endorsed a coordinated, basinwide approach to the reduction of salinity in the Colorado River. The salinity control units being planned and constructed by the Bureau of Reclamation are an integral component of the overall salinity control program.

We would call your attention to the detailed statement being submitted on behalf of the seven basin states, acting through the Colorado River Basin Salinity Control Forum, in which statement Colorado concurs. The Forum seeks, and Colorado supports, the sums set forth in the President's budget request.

Colorado is particularly pleased with the President's budget request for construction on the Lower Gunnison Salinity Control Unit (winter water system) and continuing construction on the Grand Valley Salinity Control Unit. In both instances, the state and local water users have, at the Bureau's request, accomplished certain activities and prerequisites in order to enable these salinity control units to go forward. We have met the schedules requested of us by the Bureau for its benefit. The President's budget will, as it should, maintain those schedules.

Corps of Engineers

The sums contained in the President's recommended budget are adequate for the timely execution and continuation of federal flood control projects in Colorado. We would caution, however, that any reduction in these budget requests would unnecessarily jeopardize the lives and properties of many thousands of Coloradans.

We support the President's recommended budget for continuing construction on the Westerly Creek flood control project in Denver and Aurora. This project is needed to enable local governments in the area to solve problems upstream from the proposed federal project, which would be located on Lowry Air Force Base. Those upstream problems cannot be addressed until the federal project goes forward.

We also support the President's budget request to continue preconstruction engineering and design work for the proposed flood control project at Alamosa. This project will provide protection to the heart of downtown Alamosa and is badly needed.

Finally, we would thank Congress for its past support of the Fountain Creek flood control project in Pueblo, which was completed last year. This project will enable redevelopment activities which are of great importance to the economic welfare of that community to go forward. Your assistance is greatly appreciated.

bj

Mr. MYERS. We have several other statements on behalf of the Colorado River Basin Salinity Control Program that we will insert in the record at this point.

[The information follows:]

1890-1990 WYOMING CENTENNIAL
A LASTING LEGACY

THE STATE OF WYOMING

MIKE SULLIVAN
GOVERNOR

GORDON W. FASSETT
STATE ENGINEER

State Engineer's Office

HERSCHLER BUILDING
CHEYENNE, WYOMING 82002-0370
(307) 777-7354

March 27, 1990

The Honorable Tom Bevill, Chairman
Subcommittee on Energy and Water Development
House Appropriations Committee
2362 Rayburn House Office Building
Washington, D.C. 20515

Re: State of Wyoming's Support of the President's Request for Appropriations for the U.S. Bureau of Reclamation for the **Colorado River Basin Salinity Control Program**

Dear Chairman Bevill:

I am writing to express the support of the State of Wyoming for the appropriation of funds, as identified in the President's Fiscal Year 1991 Budget for the Department of the Interior, Bureau of Reclamation's Colorado River Basin Salinity Control Program. The President's budget recommends the following amounts for Title II of the Colorado River Basin Salinity Control Program of the Bureau of Reclamation:

Construction	$22,838,000
Plan Formulation	934,000
Operation and Maintenance	455,000
TOTAL:	$24,228,000

Very recently this Committee which you chair received testimony from the Colorado River Basin Salinity Control Forum, which was presented by Jack A. Barnett, the Forum's Executive Director. The State of Wyoming is an active participant and member State of the Forum. Wyoming concurs in the Forum's statements of support for the Title II Program of the Bureau of Reclamation's Colorado River Basin Salinity Control Program in total. As Mr. Barnett has indicated, the Forum, on which I sit, has concluded that the President's budget recommendations for this important salinity control program is adequate to ensure that Colorado River Basin water quality degradation due to salt loading does not occur, and that the total dissolved solid levels will not exceed the water quality numeric criteria adopted by the States and concurred in by the Environmental Protection Agency.

Further, as also stated in the Forum's testimony, it is the shared belief of the Colorado River Basin States, including Wyoming, that the failure to fund the Bureau's Colorado River Basin Salinity Control Program at the appropriate level identified in the President's recommended budget will greatly increase the probability that the water quality standards mentioned above will be violated in the Colorado River Basin in future years. This would be a problem of great magnitude to the United States and to the Colorado River Basin States. Funding levels necessary at that time to rectify the problem would be significantly higher than if the Program is funded at the recommended levels now, which levels are consistent with the adopted Plan of Implementation.

The State of Wyoming believes that the President's budget recommendation, totalling $24,228,000 for the Title II portion of the Colorado River Basin Salinity Control Program of the Bureau of Reclamation is appropriate and adequate to allow the timely continuation of this important Basin-wide water quality program. On behalf of the State of Wyoming, I urge your Committee to recommend that this level of funding be appropriated to the Bureau of Reclamation for Fiscal Year 1991.

Thank you for the opportunity to present this statement of support for the adequate funding of this important program.

With best regards,

Gordon W. Fassett

Gordon W. Fassett
State Engineer
Member, Colorado River
Basin Salinity Control
Forum

GWF/JWS/js

Colorado River Basin
Salinity Control Forum

GOVERNORS
Rose Mofford, AZ
George Deukmejian, CA
Roy Romer, CO
Robert Miller, NV
Garrey Carruthers, NM
Norman H. Bangerter, UT
Mike Sullivan, WY

FORUM MEMBERS
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Hanna Cortner
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Stephen E. Reynolds
Utah
D. Larry Anderson
Jack B. Pitkin
Wyoming
Gordon W. Fassett
William L. Garland
Dan S. Budd

EXECUTIVE DIRECTOR
Jack A. Barnett

Statement of the COLORADO RIVER BASIN SALINITY CONTROL FORUM

**to the
HOUSE COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT**

presented by
JACK A. BARNETT, EXECUTIVE DIRECTOR
March 28, 1990

In Support of the President's
Request for Appropriations
for the
COLORADO RIVER SALINITY CONTROL PROGRAM

For the Department of the Interior

Bureau of Reclamation - FY 91 Appropriation

Colorado River Basin Salinity Control
Forum's Recommendation:

Construction	$22,838,000
Plan Formulation	935,000
TOTAL	$23,773,000

RECENT BACKGROUND
Detailed Fund Allocation

In 1984 the Congress acted to revise the Salinity Control Act and to establish a policy increasing the Basin States' cost-share to 30 percent of newly authorized salinity control works. This increase has made the Basin States even more attentive to the cost-effectiveness of the various components of the Colorado River Salinity Control Program.

After significant efforts to coordinate the views of many federal agencies and the seven Basin States, the Colorado River Basin Salinity Control Forum finalized the triennial report required under the Clean Water Act. That document, entitled the 1987 Review, Water Quality Standards for Salinity, Colorado River System, establishes a plan for salinity control in the Colorado River Basin that is in agreement with federal agencies' findings as to needs and recommended programs. These programs are required to maintain state-adopted and EPA-approved water quality standards for the River.

The Administration has now concluded that to implement the needed and necessary program identified in that report, the Bureau of Reclamation would require a total appropriation of $23,773,000 in FY 91. The Colorado River Basin Salinity Control Forum has determined that it can support the President's request. The Basin States have re-examined all of the features needed to control the salinity in the Colorado River. They have concluded that the President's budget should ensure that degradation of the water quality with respect to salinity of the Colorado River does not occur, and total dissolved solid levels do not exceed the water quality numeric criteria agreed to by the States and concurred upon by EPA.

With respect to construction, the Basin States urge the Congress to appropriate $14,732,000 for continuation of canal and lateral lining in the Grand Valley of Colorado; $3,380,000 for the continuation of the construction of facilities to dispose of salt brines in the Paradox Valley of Colorado; and $4,726,000 for construction in the Lower Gunnison area of Colorado so that the winter water supply can be placed in pipelines.

The Forum supports the President's budget for plan formulation. These funds would be used (1) for further analysis of salinity control opportunities at several locations including the Price-San Rafael Unit (Utah), the San Juan Unit (New Mexico), and the Glenwood-Dotsero Unit (Colorado), (2) to examine the cost-effectiveness of the overall program, and (3) to search for opportunities to remove additional salts from nonpoint sources.

It is noted that funds have been requested by Reclamation in the portions of their budget related to operation and maintenance and general administrative expenses. The Forum supports funding levels that will ensure adequate operation and maintenance of constructed salinity facilities and that would ensure the needed coordination and technical support functions. It should be noted that an opportunity has developed to work with private industry at Glenwood Springs, Colorado. There industry is proposing to build a cogeneration plant to produce electrical power from natural gas and to extract salt from the saline springs. The Forum is proposing legislation which would allow Reclamation to pay industry, out of FY 92 operation and maintenance funds, for salts removed.

If an appropriate level of funding is not provided in FY 91 and in future fiscal years for the Colorado River Salinity Control Program, the probability of violating water quality standards for salinity is greatly increased. To delay adequate funding today will ultimately result in the need to construct and implement a salinity control program at significantly higher costs in the future.

JUSTIFICATION

The waters of the Colorado River system serve some 18 million people and irrigate approximately 1.6 million acres in the seven Colorado River Basin States. The River also provides domestic and irrigation water to Mexico. Salinity has long been recognized as one of the major problems in the River. Water users in the lower reaches of the River system have suffered significant adverse impacts due to the River's salinity. These impacts have been estimated to be in excess of $300 million a year. Without salinity control measures and with increased demands for Colorado River water in the Basin, the River's salinity is projected to double by the turn of the century, with concomitant increases in salinity damages.

The Basin States' concern with the River's increasing salinity led to the creation of the Colorado River Basin Salinity Control Forum in 1973. The Forum, whose members are appointed by the governors of the respective states, developed a salinity control policy that called for maintaining salinity concentrations at or below those levels found in the lower River in 1972, while the Basin States continue to develop their compact-apportioned waters. The Forum has a continuing responsibility to see that a salinity control plan is implemented to meet the policy objectives.

After discussions between the federal government, the Republic of Mexico and the seven Colorado River Basin States, the Congress enacted in 1974 the Forum-sponsored Colorado River Basin Salinity Control Act (P.L. 93-320). Title I of the Act established a program to reduce the concentration of salts in the Colorado River below Imperial Dam (the last diversion point in the United States) for waters being delivered to Mexico. Title I was identified by Congress as a federal commitment. The Act also established an associated program, Title II, which allowed the states and the federal government to work together to prevent salinity increases in the Colorado River above Imperial Dam, benefitting users in the United States as well as Mexico. The 1974 Act also created a Colorado River Basin Salinity Control Advisory Council, composed of gubernatorial representatives of the Basin States to advise the Secretaries of the Interior and Agriculture and the Administrator of the Environmental Protection Agency as to needed annual adjustments to the salinity control effort.

In 1984, Congress enacted much-needed amendments to the 1974 Act that were advanced by the Forum. The amendments (Public Law 98-569) authorized additional activities for the Departments of the Interior and Agriculture that were needed in order to meet the objectives of the Act. Previously the Congress had required the

Basin States to, over a period of time, reimburse the Bureau of Reclamation expenditures in the amount of 25 percent of the total construction costs. The 1984 amendments by Congress required that for newly authorized construction, the Basin States must pay 30 percent of the construction costs upon expenditure, or over a period of time with interest.

Since the enactment of the 1984 amendments, the Basin States and all of the involved agencies of the federal government have worked diligently to formulate a program that would minimize the cost of controlling the salinity of the Colorado River. These cooperative study efforts have shown that the salinity of the River can now be controlled to meet the objectives of the Act as amended, with a funding level significantly less than that initially identified.

The above findings have been published in the 1989 Joint Evaluation of Salinity Control Programs in the Colorado River Basin. This report, prepared jointly by all of the federal agencies involved in the salinity control effort (in consultation with the States), provides the best information available, at this point in time, to justify our requested level of appropriation. Unfortunately, the President's recommended appropriation does not satisfy the funding needs identified in this report.

In summary, we urge that the House Committee on Appropriations, Subcommittee on Energy and Water Development, recommend $23,773,000 be appropriated in FY 91. We feel it is important to again note that any further cuts in these appropriations would delay implementation of the Salinity Control Program, and could result in exceeding the salinity water quality numeric criteria for the River and significant future damage to the users of the Colorado River in the United States and Mexico. Catch-up funding attempts in future fiscal years will result in a program that will ultimately cost much more.

Jack A. Barnett
Executive Director

BOB MILLER, *Governor*
JOHN T. MORAN, JR., *Chairman*
RICHARD SEGERBLOM, *Vice Chairman*
JACK L. STONEHOCKER, *Director*

STATE OF NEVADA

ROBERT C. BROADBENT, *Member*
THOMAS A. COWARD, *Member*
ROBERT L. CROWELL, *Member*

COLORADO RIVER COMMISSION
OF NEVADA
1515 E. Tropicana, Suite 400
Las Vegas, Nevada 89158
(702) 486-7060

March 30, 1990

Honorable Tom Bevill
Chairman, Subcommittee on Energy
and Water Development
House Committee on Appropriations
Room 2362 Rayburn House Office Building
Washington, DC 20515

Dear Congressman Bevill:

As a Nevada representative of the Colorado River Basin Salinity Control Forum, I am writing in support of the President's Fiscal Year 1991 budget request for $23,773,000 for the Bureau of Reclamation's Colorado River Basin Salinity Control Program.

Since salinity is one of the major problems in the Colorado River system, it is imperative that the salinity control program not be curtailed and that adequate funding be appropriated in Fiscal Year 1991 so that the congressionally directed salinity objectives can be achieved. Therefore, I request your support for the Administration's current recommendation for funding to the Colorado River Basin Salinity Control Program.

Sincerely,

Jack L. Stonehocker

Jack L. Stonehocker
Director

THURSDAY, MARCH 29, 1990.

MNI WICONI PROJECT, SD

WITNESSES

KURT PFEIFLE, MANAGER, MNI WICONI RURAL WATER SUPPLY PROJECT
JOE HIEB, CHAIRMAN, LYMAN JONES WATER USERS ASSOCIATION
GEORGE RENNING, CHAIRMAN, WEST RIVER RURAL WATER SYSTEM
JOHN MADDEN, ENGINEER, WEST RIVER RURAL WATER SYSTEM
PAUL GOLDHAMMER, WEST RIVER BOARD MEMBER

Mr. MYERS. Mr. Pfeifle is here. Why don't you come forward with your group?

Mr. PFEIFLE. Mr. Chairman, even though my name is on the agenda, Mr. Hieb will be giving the testimony along with Mr. Renning, Chairman of the West River, who will give some additional comments.

Mr. MYERS. Your entire written statement will be made a part of the record.

Mr. HIEB. I appear in support of the appropriation for the Mni Wiconi Water Supply project on behalf of the Lyman Jones and West River Rural Water Systems. Also in attendance and available to answer questions are George Renning, President, West River Rural Water System; Paul Goldhammer, West River Board Member; Kurt Pfeifle, our manager; and our engineer, John Madden.

The Mni Wiconi project will provide desperately needed drinking water for a large portion of Western South Dakota. The poster display that we are holding up and the pictures that we are passing out show the area to be served. The area represents approximately 12,500 square miles without water that meets Safe Drinking Water Act standards.

This piece of pipe that I will pass around for your inspection is representative of the water quality problems we face. That pipe is plugged with gypsum crystals. It was removed from a private water supply system after only two years of service in connection with a deep well. That well is located north of the project area town of Hayes.

We have also seen similar problems with pipe plugged with iron and manganese encrustation. Additionally, many of the wells have high levels of radioactive material that exceed Safe Drinking Water Act standards.

In general, the water isn't fit for man or beast to drink. Congress recognized that fact and authorized the Mni Wiconi project. We thankfully acknowledge that this committee has also recognized our problem and last year appropriated $500,000 for the Mni Wiconi project.

In authorizing the project, Congress identified several preconstruction requirements. With the financial assistance from Congress in fiscal year 1990 and the cooperation of the Bureau of Reclamation, we have made significant progress toward completing those preconstruction requirements. Contracts between the respective water systems and the Bureau of Reclamation are in their final states of development and we anticipate that all of the fiscal year 1990 funds will be used by the end of this year.

Significant progress has also been made in developing the organizational structure required to implement the project. The Mni Wiconi Project Cooperative has been incorporated under state law and that corporation is being used to accomplish the needs assessment phase for the West River and Lyman-Jones rural systems. The cooperative is structured to include representation from the Oglala Sioux Tribe and in that manner may serve as the future project non-federal entity.

Although our progress has not been as fast as we would like to see it, we are making significant progress. If you approve our fiscal year 1991 appropriation request of $1.5 million, we will be able to complete all of the preconstruction planning requirements and be ready to initiate construction in fiscal year 1992. Material that we have submitted in our written testimony outlines our construction requirements for fiscal year 1992 through fiscal year 1995.

In reviewing our budget request, please note the appropriation testimony support provided by not only the Oglala Sioux Tribe and West River and Lyman Jones Water Systems, but our complete congressional delegation, the state of South Dakota and favorable consideration by the Bureau of Reclamation in their capability statement.

Thank you for your time and attention. I would be glad to answer any questions that you might have.

Mr. MYERS. Thank you, Mr. Hieb.

Mr. Renning.

Mr. RENNING. Mr. Chairman and Members of the committee, my name is George Renning. We are in support of the $1.5 million appropriation for this Mni Wiconi project. I am a rancher and live near Kadoka, South Dakota, near the middle of the project area. I have lived there and ranched there most of my life. Water is important to my life and my ranch livestock.

In my lifetime, I have seen the effects of poor water quality and almost no water at all. When the stock ponds dry up we often have grasslands that we can't use. As the water supply is cut back, we are forced to sell off our livestock. When ranchers have well problems at home they have water trucked in. The water we do have generally doesn't meet safe drinking water standards.

It has always been that way, but we have a chance to change that. When people come to visit us they won't have to bring their own water. When tourists travel Interstate 90 through western South Dakota they will be able to drink the water. That is why I have worked for the Mni Wiconi project for over 10 years.

I have served in the South Dakota legislature and understand the hard decisions necessary to make the maximum use of limited dollar resources. I understand that when I ask you to help us build the Mni Wiconi project.

During the authorization process we demonstrated our project need. In the past year we have worked with the Oglala Sioux Tribe, the Lyman-Jones System, the State of South Dakota and the Bureau of Reclamation to get the project started.

We have spent over $500,000 of our own money to get the project this far. The South Dakota legislature has appropriated and set aside $1.5 million to meet the non-federal match requirements.

Every day people call our project office to ask how they can help and when they will get the water.

This is a project to deliver quality water to people who are drinking water that people shouldn't be allowed to drink.

This is a project that can serve as a good example of Indians and non-Indians working together with all levels of government to solve a common problem.

The funds that you appropriated last year are being put to good use. People in our area take interest and pride in the project and eagerly await its benefits.

We have worked hard and are willing to keep working, but we need your help.

Thank you for your kind attention.

Mr. BEVILL. Very good. Thank you very much.

[The statement in support of the Mni Wiconi project follows:]

MNI WICONI

FY 91 APPROPRIATIONS REQUEST

ENERGY AND WATER DEVELOPMENT
SUBCOMMITTEE ON APPROPRIATIONS

GOOD WATER FOR PEOPLE
PL 100-516

March 29, 1990

MNI WICONI RURAL WATER SUPPLY PROJECT

Providing Water to the

Oglala Sioux Tribe
Lyman-Jones Rural Water System
West River Rural Water System

MNI WICONI

WATER SUPPLY PROJECT

FY 91 APPROPRIATIONS REQUEST SUMMARY

FY 91 APPROPRIATION REQUEST

We request that the FY 91 Bureau of Reclamation Appropriation include $1,500,000 for the Mni Wiconi Rural Water Supply Project for the purposes authorized in PL 100-516.

MNI WICONI PROJECT NEEDS

Western South Dakota, including the Pine Ridge Indian Reservation, has severe water quality problems. The "Mni Wiconi Project Act of 1988" (PL 100-516) authorized construction of drinking and livestock facilities to serve a 12,500 square mile area in western South Dakota. Facilities include 2300 miles of pipeline, 17 pumping stations and 6.7 million gallons of water storage. Congress appropriated $500,000 to initiate this project in FY 90. Those funds are being utilized to further the project and will be expended in FY 90.

LOCAL RESPONSE TO AUTHORIZATION AND FY 90 FUNDING

News of congressional support for the project has resulted in additional local and statewide support for the project. New member interest resulted in an increase in household and pasture services in the West River & Lyman Jones systems. Door to door surveys on the Pine Ridge Indian Reservation demonstrate almost unanimous request for water service. These increases were anticipated in the pre-authorization planning.

The South Dakota state legislature appropriated $1,500,000 to be used as non-federal matching funds and the State has entered into contracts with the West River & Lyman Jones RWS to use those funds.

The Mni Wiconi Cooperative, Inc. has been established to serve as the non-federal entity as provided in the Act and the West River & Lyman Jones systems have executed their membership agreements. Contracts with the Secretary are being developed by the Bureau of Reclamation.

PROJECT SUMMARY DESCRIPTION

Project facilities will take Missouri River water from an intake constructed in the power house at the Oahe Dam. The treatment plant will have capacity to treat 8 million gallons per day. Within the 12,500 square mile service area the system will include 2,300 miles of pipeline ranging in sizes from 1-1/2" to 30" in diameter, 17 pumping stations with a combined 5,000 horsepower and 6.7 million gallons of water storage. The total estimated cost indexed to January 1987 is $100 million.

The project will allow municipal, industrial and rural water systems to provide safe and reliable drinking water for the residents of the Pine Ridge Indian Reservation and Lyman, Jones, Jackson, Haakon, Shannon and Stanley Counties. Portions of Bennett, Mellette and Pennington Counties will also receive water from the system.

The project will provide water to 13 municipalities with a population of 5,932 in the West River and Lyman-Jones service areas and 12 Indian communities on the Pine Ridge Reservation with a population of approximately 10,000. A total of over 1,434 rural households will be served individually with an additional 75 households served through existing rural systems. Approximately 730 separate rural pasture locations will be served for livestock watering purposes.

MNI WICONI

FY 91 APPROPRIATIONS REQUEST

WATER QUALITY AND HEALTH CONSIDERATIONS

Findings of the House of Representatives Committee on Interior and Insular Affairs (Report 100-733; June 27, 1988) are summarized as follows:

- The existing water supplies are extremely high in dissolved minerals. Safe drinking water standards are exceeded at some locations. This poor quality has led to some severe health problems.
- Maintaining reliable, safe and affordable water supplies are a continuing problem.
- The primary water supply source outside the reservation is from ground water wells. These are very deep, highly mineralized and very expensive to construct and maintain.
- Typical rural residents tend to pay from $1,000 to more than $6,000 annually for water supplies, with average annual costs estimated at $5,300.
- On the Pine Ridge Indian Reservation, conditions are even more difficult. The Pine Ridge Reservation suffers from the same problems of water quality and quantity that are experienced in other parts of south central South Dakota. However, in addition to water quality problems, many individual households have no reliable water supply at all.
- One-fifth of all Indian households on the Pine Ridge Reservation were *not* served by a community or individual water system. The percentage of Indian homes without water service on the Pine Ridge Reservation is greater than almost any other reservation.
- In those households with water supplies, the IHS found that water quality is below acceptable standards.
- The reservation has high rates of skin disease, shigella, hepatitis, and high rates of mortality and hospitalization rates for infectious diseases. A portion of these diseases may be attributed to poor environmental conditions, including poor water.
- A recent study done by the non-profit research group Rural Coalition found high levels of potentially harmful elements and minerals in the groundwater aquifers serving Indian reservations in South Dakota, including Pine Ridge. The Coalition also found a linkage between the high levels of radiation in the water and a high incidence of kidney disease on the Reservation.
- The availability of a reliable supply of potable water can be expected to assist efforts by the Tribe to attract new industry and promote economic development to the Reservation.

Additional information previously submitted to the committee demonstrates that an alarmingly high percentage of public water supplies in the project area fail to meet SDWA standards. Public Health Service reports and material submitted by the Oglala Sioux Tribe documents serious health concerns that are associated with existing water quality.

Alternative water sources do not exist. Relocation is not a practical consideration. Continuation of status quo is not in the public interest.

ECONOMIC CONSIDERATIONS

The Lyman-Jones, West River and Oglala Sioux Rural Water Systems are located in west central South Dakota. The reservation and counties to be served by these water systems are among the poorest in the nation.

The current economic base is livestock agriculture and tourism along Interstate Highway 90. The livestock industry is adversely affected by unreliable water supplies that are dependent on drought impacted stock ponds and shallow wells. Highly mineralized water is also detrimental to livestock, particularly small calves, hogs and poultry. The tourism population is severely impacted by intolerable water quality. Tourists unaccustomed to the highly mineralized water commonly experience intestinal discomfort.

New industry will not locate within an area that cannot offer even minimum water supply that meets SDWA standards.

The Mni Wiconi project area faces a third year extension of the "1988 Drought" with no indication that conditions will change soon. The authorized project facilities will serve to offset or eliminate significant drought related stresses on the public water supplies, livestock water supplies, and economic development in the project area.

LOCAL SUPPORT

The Mni Wiconi project has continually received very strong local support. Over 1,430 individual farmers and ranchers paid $300 signup membership fees to support pre-authorization expenses and to request service at their location. They also signed up over 730 pasture locations at $150 each. These are significant increases over similar number reported to you at this time last year. As a condition to signup they agreed to provide pipeline R-O-W easements on their property and to forego compensation as further contribution to the cost of construction. They willingly make these commitments in anticipation of this urgently needed project.

At an August 25, 1986 Senate subcommittee public hearing (S. Hrg. 99-1031) in Kadoka, South Dakota, over 400 appeared in support of the project. **No one testified or submitted testimony in opposition.** Representatives of the Oglala Sioux Tribe requested that service be extended to include the Pine Ridge Indian Reservation.

Public hearings were held throughout the project area during the 1988 Environmental Assessment conducted in response to testimony received during House and Senate Subcommittee hearing held December 15, 1987. **No testimony was received in opposition to the project, or, in opposition to the project because of adverse environmental impacts.**

Governor George Mickelson, the South Dakota Legislature, and the South Dakota Department of Water & Natural Resources have supported the project on numerous occasions. Their support has included significant financial commitments. Their most recent action is the appropriation of $1,500,000 by the 1989 legislature as their contribution to the 35 percent non-federal costs of the Lyman-Jones and West River rural water systems.

The Tribal Chairman, members of the Oglala Sioux Tribal Council and Indian Health Service representatives have testified to the need for the project on the Pine Ridge Indian Reservation. Their only qualification in entering the project is that their participation is not interrupted as a *de facto* adjudication of their water rights.

The Oglala Sioux Tribe, West River Rural Water System and Lyman-Jones Rural Water System have each designated representatives to serve on the Mni Wiconi Project Steering Committee. Their cooperative efforts are resulting in completion of the legislative pre-construction requirements.

UTILIZATION OF FY 90 APPROPRIATIONS

Congress appropriated $500,000 in FY 90 for the Mni Wiconi project. These funds are being used to address the following pre-construction requirements:

A. Completion of a needs assessment.

B. Development of a water conservation plan.

C. Finalization of the service area distribution plan and cost estimate.

D. Collection of baseline environmental data.

E. Bureau of Reclamation oversight.

We anticipate that the total FY 90 appropriation will be used in FY 90.

UTILIZATION OF FY 91 AND FOLLOWING YEAR APPROPRIATIONS

The requested funding level will complete the pre-construction phase for the Mni Wiconi project. Timely completion of these efforts will be required to allow initial construction in FY 92. The primary activities include:

A. Completion of the Final Engineering Report.

B. Completion of the Environmental Assessment.

C. Developing the consolidated Water Conservation Plan.

D. Definition of the O & M Plan.

E. The NEPA compliance document.

F. Design data collection and initiation of final design.

G. USBR Oversight.

MNI WICONI WATER SUPPLY PROJECT

PROPOSED FEDERAL FY 1991 BUDGET

	West River RWS	Lyman-Jones RWS	Oglala Sioux Tribe	Total Federal Funding
Member System Participation				
Office Supplies & Equipment	$ 6,500	$ 6,500	$15,000	$ 28,000
Transportation	4,000	4,000	10,000	18,000
Telephone & Postage	1,500	1,500	3,000	6,000
Administrative Travel	5,000	5,000	12,000	22,000
Director Expenses	25,000	25,000	30,000	80,000
Staff - Payroll	20,000	20,000	50,000	90,000
- Fringe Benefits	8,000	8,000	20,000	36,000
Legal Services	20,000	20,000	40,000	80,000
	$90,000	$90,000	$180,000	$360,000
Sub Contracted Services				
Final Engineering Report				$250,000
Environmental Assessment				150,000
Consolidated Water Conservation Plan				150,000
Operation & Maintenance Plan				75,000
NEPA Compliance Document				100,000
Plans & Specification for FY 92 Construction				190,000
				$915,000
USBR Oversight				225,000
FY 1991 TOTAL				$1,500,000

PROJECTED FY 92-FY 95 BUDGETS

Fiscal Year	Federal Funds
FY 92	$ 5,500,000
FY 93	11,800,000
FY 94	12,500,000
FY 95	12,500,000

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THURSDAY, MARCH 29, 1990.

VALLEY PARK FLOOD CONTROL PROJECT, MISSOURI

WITNESSES

HON. JACK BUECHNER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MISSOURI

FRED L. PALMER, JR., MAYOR, CITY OF VALLEY PARK, MO

Mr. BEVILL. The chair recognizes our good friend and colleague, Mr. Buechner.

Mr. BUECHNER. Mr. Chairman I would like to thank both you and the Vice-Chairman Myers for the opportunity to testify in support of the proposed Valley Park Levee. I would also like to thank the chairman for allowing Mayor Fred Palmer of Valley Park to testify.

Mr. Chairman, Valley Park is a small community of 5,000 people located within my district. Valley Park sits along the Meramec River, which makes it susceptible to destructive flooding. Since 1945, six major floods have occurred in this area. In addition to the major floods, Valley Park experiences minor floods each year, causing annual damages between $2.5 and $3.0 million. I can remember as a young boy that my swimming pool always got flooded. It was right next door to the Meramec. The most recent occurred in 1982, devastating the town and causing over $30 million in damages. As you can imagine, Mr. Chairman, the continuing threat of a major flood has stifled economic growth and development in Valley Park, and has brought considerable misery to its residents.

Fortunately, the citizens of Valley Park can be protected from future flooding through the construction of a levee—a project I strongly support. The city needs needs $500,000 for fiscal year 1991 to begin construction of the badly needed levee.

Mr. Chairman, I am not the only congressional supporter of the levee—it has been backed by Senators Bond and Danforth, along with Majority Leader Gephardt, whose district borders Valley Park.

The Valley Park Levee Project cannot be challenged on the grounds that it does not meet financial or legal requirements. The City of Valley Park has met the local cost-sharing requirements, which total over $4 million. The levee project also meets the cost/benefit analysis established by the Army Corps of Engineers. In fact, when Mr. Page, the Assistant Secretary of the Army for Civil Works, testified before your subcommittee last February, he stated that the project is economically feasible and there were no reasons to deny funds for construction of the levee.

Mr. Chairman, I would be remiss in my testimony if I fail to address the human elements of this project. To the residents of Valley Park, this levee is more than a cost-benefit ratio or an appropriation. The levee represents their chance at a secure and stable future. Without the levee, there is no future for this area.

The $4 million that the citizens of Valley Park have committed for this project represents a substantial sacrifice for a town of only 5,000 people. Further evidence of their commitment are the 1,100 letters I have received from Valley Park residents—from children too young to remember the 1982 flood to senior citizens who have lived through many. What unites these citizens is a long-standing desire to see the threat of another destructive flood finally ended. All they are asking for is a helping hand so they can protect themselves from further devastation. To show you the unique nature of these people, they had an opportunity to merge the Valley Park School District with a very affluent school district that abutts it, one that has computers, swimming pools, and the state champion swim team. The people turned it down because they believe in their community and that special unit.

That I think signifies the community strength within Valley Park.

In conclusion, Mr. Chairman, the levee meets the requirements for construction by the Corps of Engineers. In fact, Congress has already been convinced of the need for the levee since it authorized this project in the 97th Congress. All; that remains is securing the funds for construction. It is rare that so little funding can do so much good. To that end, I am respectfully requesting that you and the other members of this subcommittee grant support for this much-needed request.

Now Mr. Chairman, I would like to introduce the Honorable Fred Palmer, Mayor of Valley Park. He has brought along several officials form the city to provide additional testimony to prove the need for the levee.

Thank you.

[The statement of Hon. Jack Buechner follows:]

TESTIMONY OF THE HONORABLE JACK BUECHNER

BEFORE THE APPROPRIATIONS COMMITTEE
SUBCOMMITTEE ON ENGERGY AND WATER DEVELOPMENT

IN SUPPORT OF THE PROPOSED VALLEY PARK LEVEE PROJECT

MARCH 29, 1990

MR. CHAIRMAN, I WOULD LIKE TO THANK BOTH YOU AND VICE-CHAIRMAN MYERS FOR THE OPPORTUNITY TO TESTIFY IN SUPPORT OF THE PROPOSED VALLEY PARK LEVEE. I WOULD ALSO LIKE TO THANK THE CHAIRMAN FOR ALLOWING MAYOR FRED PALMER OF VALLEY PARK TO TESTIFY.

MR. CHAIRMAN, VALLEY PARK IS A SMALL COMMUNITY OF 5,000 PEOPLE LOCATED WITHIN MY DISTRICT. VALLEY PARK SITS ALONG THE MERAMEC RIVER, WHICH MAKES IT SUSCEPTIBLE TO DESTRUCTIVE FLOODING. SINCE 1945, SIX MAJOR FLOODS HAVE OCCURRED IN THIS AREA. THE MOST RECENT OCCURRED IN 1982, DEVASTATING THE TOWN AND CAUSING OVER $30 MILLION IN DAMAGES. AS YOU CAN IMAGINE, MR. CHAIRMAN, THE CONTINUING THREAT OF A MAJOR FLOOD HAS STIFLED ECONOMIC GROWTH AND DEVELOPMENT IN VALLEY PARK, AND HAS BROUGHT CONSIDERABLE MISERY TO ITS RESIDENTS.

FORTUNATELY, THE CITIZENS OF VALLEY PARK CAN BE PROTECTED FROM FUTURE FLOODING THROUGH THE CONSTRUCTION OF A LEVEE -- A PROJECT I STRONGLY SUPPORT. THE CITY NEEDS $500,000 FOR FISCAL YEAR 1991 TO BEGIN CONSTRUCTION OF THE BADLY NEEDED LEVEE.

MR. CHAIRMAN, I AM NOT THE ONLY CONGRESSIONAL SUPPORTER OF THE LEVEE -- IT HAS BEEN BACKED BY SENATORS BOND AND DANFORTH, ALONG WITH MAJORITY LEADER GEPHARDT, WHOSE DISTRICT BORDERS VALLEY PARK.

THE VALLEY PARK LEVEE PROJECT CANNOT BE CHALLENGED ON THE GROUNDS THAT IT DOES NOT MEET FINANCIAL OR LEGAL REQUIREMENTS. THE CITY OF VALLEY PARK HAS MET THE LOCAL COST-SHARING REQUIREMENTS, WHICH TOTAL OVER $4 MILLION. THE LEVEE PROJECT ALSO MEETS THE COST/BENEFIT ANALYSIS ESTABLISHED BY THE ARMY CORPS OF ENGINEERS. IN FACT, WHEN MR. PAGE, THE ASSISTANT SECRETARY OF THE ARMY FOR CIVIL WORKS, TESTIFIED BEFORE YOUR SUBCOMMITTEE LAST FEBRUARY, HE STATED THAT THE PROJECT IS ECONOMICALLY FEASIBLE AND THERE WERE NO REASONS TO DENY FUNDS FOR CONSTRUCTION OF THE LEVEE.

MR. CHAIRMAN, I WOULD BE REMISS IN MY TESTIMONY IF I FAIL TO ADDRESS THE HUMAN ELEMENTS OF THIS PROJECT. TO THE RESIDENTS OF VALLEY PARK, THIS LEVEE IS MORE THAN A COST-BENEFIT RATIO OR AN APPROPRIATION. THE LEVEE REPRESENTS THEIR CHANCE AT A SECURE AND STABLE FUTURE.

THE $4 MILLION THAT THE CITIZENS OF VALLEY PARK HAVE COMMITTED FOR THIS PROJECT REPRESENTS A SUBSTANTIAL SACRIFICE FOR A TOWN OF ONLY 5,000 PEOPLE. FURTHER EVIDENCE OF THEIR COMMITMENT ARE THE 1,100 LETTERS I HAVE RECEIVED FROM VALLEY PARK RESIDENTS -- FROM CHILDREN TOO YOUNG TO REMEMBER THE '82 FLOOD TO SENIOR CITIZENS WHO HAVE LIVED THROUGH MANY. WHAT UNITES THESE CITIZENS IS A LONG-STANDING DESIRE TO SEE THE THREAT OF ANOTHER DESTRUCTIVE FLOOD FINALLY ENDED. ALL THEY ARE ASKING FOR IS A HELPING HAND SO THEY CAN PROTECT THEMSELVES FROM FURTHER DEVASTATION.

IN CONCLUSION, MR. CHAIRMAN, THE LEVEE MEETS THE REQUIREMENTS FOR CONSTRUCTION BY THE CORPS OF ENGINEERS. IN FACT, CONGRESS HAS ALREADY BEEN CONVINCED OF THE NEED FOR THE LEVEE SINCE IT AUTHORIZED THIS PROJECT IN THE 97TH CONGRESS. ALL THAT REMAINS IS SECURING THE FUNDS FOR CONSTRUCTION. IT IS RARE THAT SO LITTLE FUNDING CAN DO SO MUCH GOOD. TO THAT END, I AM RESPECTFULLY REQUESTING THAT YOU AND THE OTHER MEMBERS OF THIS SUBCOMMITTEE GRANT SUPPORT FOR THIS MUCH-NEEDED REQUEST.

NOW MR. CHAIRMAN, I WOULD LIKE TO INTRODUCE THE HONORABLE FRED PALMER, MAYOR OF VALLEY PARK. HE HAS BROUGHT ALONG SEVERAL OFFICIALS FROM THE CITY TO PROVIDE ADDITIONAL TESTIMONY TO PROVE THE NEED FOR THE LEVEE.

THANK YOU.

Mr. **Bevill**. The Chair recognizes you, Mayor Palmer.

Mr. **Palmer**. Thank you Congressman. We appreciate you and your support. Mr. Chairman, recognizing the time elements, I would like to request that my testimony as well as other folks who have traveled from St. Louis County in Valley Park, Missouri, be entered into the record.

I would like, however, with your permission to recognize some of these people with me today. My wife, Jill, our President of our Board of Aldermen, Gary Adams, and his wife, Dina. Alderman Nicolas. Our Superintendent of Schools, John Cleary, we have two Fire Board members, Marguerite Wilburn, with her husband Don, and Edgar Walker. We have Eric Martin and his son Aaron. We have the President of the Meramac Valley Bank, Bill Jones.

Mr. Chairman, I would like to thank you very much for hearing us. On behalf of all the people of our community we appreciate your time and consideration of our request. We are prepared to meet our share of the cost of this vital project and I hope and pray that the Federal Government is also.

With that, I think you very much.

Mr. **Bevill**. Thank you very much.

We will certainly work with Jack and hope to accommodate you.

Mr. **Buechner**. Thank you, Mr. Chairman.

Mr. **Myers**. There is a young man here. What is your name?

Mr. **Aaron Martin**. Aaron Martin. I am eight.

Mr. **Myers**. Where are you from?

Mr. **Aaron Martin**. St. Louis.

[The statement of Fred Palmer and others follow:]

SALAH A. HAMDAH
GARY L. ADAMS
1st Ward

LOUIS BROWN
DONALD G. CARROLL
2nd Ward

RICHARD NICOLAS
PAUL F. YOUNG
3rd Ward

BENJIE BECKETT
CARL M. WARD
4th Ward

CITY OF VALLEY PARK
VALLEY PARK, MISSOURI 63088
314 - 225-5171

FRED L. PALMER, JR.
MAYOR

GLENN E. MOON
City Collector
City Clerk and
Water Commissioner

EMMA O'BRIEN
City Treasurer

DAVID W. BROWN
Marshal

ERIC M. MARTIN
City Attorney

CHARLES L. FORD
Police Judge

Testimony of Fred L. Palmer, Jr., Mayor - Valley Park, Missouri

VALLEY PARK FLOOD CONTROL PROJECT, LOWER MERAMEC VALLEY

Mr. Chairman, I appreciate the opportunity to appear before your committee today to testify in support of a flood control project designed by the U.S. Army Corps. of Engineers and now ready for construction after so many years.

The Congress, recognizing the repeated devastation caused by flooding in the Lower Meramec Valley over the last hundred years, authorized in Section 2(h), PL 971-28, a Levee to afford the town of Valley Park protection from the ravaging floods which have so debilitated the social, economic and environmental fabric of our community. Mr. Chairman, you have no idea how much this action by the Congress meant to the people who work, live and play in our environs.

Planning, engineering and design have progressed to the point that our project is now ready for construction to begin. Unfortunately, our project has not been funded yet for construction, and that is why we are here today. In recent years, one of the more severe floods occurred in December of 1982. Water from the Meramec at Valley Park left its banks on December 3rd. The Valley Park School District was forced to close on December 6th and the river crested on December 7th, Pearl Harbor Day, 20-1/2 feet above flood stage. We were in the midst of a major disaster of crippling proportions.

The School District alone suffered over two million dollars in damages and we are not a wealthy School District. To put the situation in real life terms, consider these facts:

- The entire School District was closed for two weeks.
- Elementary school children were forced to attend a school in another district.
- The secondary school children were unable to attend their normal school for two weeks.
- All elementary teachers and many secondary teachers lost all supplies, teaching materials and lesson plans.

Of course, the entire town of Valley Park suffered tremendous losses in human, economic and societal terms. Just this one flood caused more than thirty million dollars in documented losses and damages. People had to be rescued from their homes by emergency vehicles and boats - forced to leave behind their homes, clothing, furniture and possessions of great sentimental value.

Mr. Chairman, you would have to have been there to feel the depth of our tragedy and suffering. In order to assist the Committee to better understand what it was like in Valley Park in December of 1982, we have brought some photos of that flood for you to see.

Our town's history of flooding has been well documented over the last 109 years. In fact, our problems have been thoroughly studied by the federal government, with the federal studies dating back to one completed in 1881. Now, the Congress has authorized the Corps of Engineers to prepare a solution to our flooding problems and you have approved that solution. It is a levee, about three miles long, 15-20 feet high in most areas, which will provide us with protection from the 100 year flood. There will also be other features such as pumps, drains, ponding areas and closure structures, as well as recreation areas and fishing lakes. You have appropriated funds to allow for the necessary engineering and design to allow the Corps in St. Louis to be prepared to initiate construction, possibly this Fall, if construction funds are appropriated by the Congress and not held up by the Administration.

This project's total cost will be less than one half of the damages we suffered in the 1982 flood alone. Of the total cost, the City of Valley park has signed a Local Cost Sharing Agreement with the Corps, pledging to pay our share of about four million dollars of the total cost of around thirteen million dollars. We have taken steps to raise our share by forming a special taxing district - for our share is a substantial mount of money for our town, but we will pay our share.

Mr. Chairman, we are here today to plead our case. We ask you and your fellow members to appropriate five hundred thousand dollars or more so that we can look down the path of the future and see a safe place to live, work and play; so that we can attract the new industries and businesses that would like to locate in our town due to its proximity to Interstate 44, a new state highway and bridge which now provide even better access to our area.

Mr. Chairman, the key to our being able to reverse the downward trends, to revive our economy and provide security to our homes, schools, businesses and all our people is the construction of the flood control project authorized by you and your fellow members of the U.S. Congress. Mr. Chairman, we have done everything we can. Now it is in your hands.

I am most hopeful that you will give our needs careful consideration and that you will realized that his is a perfect opportunity for the Federal and local governments and the people to join together and provide funds for this investment in a small part of America. Thank you Mr. Chairman, for your time, patience and understanding.

SALAH A. HAMDAH
GARY L. ADAMS
1st Ward

LOUIS BROWN
DONALD G. CARROLL
2nd Ward

RICHARD NICOLAS
PAUL F. YOUNG
3rd Ward

BENJIE BECKETT
CARL M. WARD
4th Ward

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EMMA O'BRIEN
City Treasurer

DAVID W. BROWN
Marshal

ERIC M. MARTIN
City Attorney

CHARLES L. FORD
Police Judge

Statement of Gary Adams, President of the Board of Alderman,
Valley Park, Missouri

VALLEY PARK FLOOD CONTROL PROJECT, LOWER MERAMEC VALLEY

Mr. Chairman, I, like so many other citizens of Valley Park, Missouri was personally affected by devastating floods in 1982 and 1983. My home and all my possessions were destroyed when rapidly rising floodwater inundated the entire city. Although I was fortunate to have flood insurance, partially insuring my property, many of my family and friends did not.

My business is now in Valley Park and my wife is employed by Valley Park's largest employer, a cotton processing firm. Both businesses are subject to being interrupted by flooding, again. The community and my family will perhaps never recover from another disaster such as occurred in 1982.

I firmly support the Corps of Engineers plan for a levee and urge your recommendation to appropriate monies for this project. We want to grow and prosper in Valley Park, but are constrained, without a levee, from building or growing.

Thank you and your members for your concern.

March 26, 1990

Testimony of Richard Nicolas, Alderman of the City of Valley Park
Valley Park, Missouri

Mr. Chairman,

I am honored to be able to have this opportunity to submit this written testimony for the record so as to save time. I am here today at my own expence, but that is a small price to pay for your support of Valley Park, Missouri flood control Project 97-128. Authorized by Congress and the Corps of Engineers.

Valley Park Missouri is a small community 23 miles west of St. Louis nestled in the Meramec Valley boardered by the Meramec River. It's a small town seasoned with ethnic and religious background. Has a taste of small town America and "neighborhood" concept. The city provides a "AAA" school system that's 108 years old. It's local business' believe in customer satisfaction and who know there customers by name. People in this town work hard and stick together. Town folk boys marry town folk girls and raise there families here and have for generations.

In December 1982 my worst fears became a reality. The Meramec river left it's banks and produced the worst recorded flood in history. Again in May 1983 it came back not as bad but enough to damage homes again that had just been partially repaired from the December flood. I cannot put into words the horror we went through in 1982. Some people lost all there belongings and family keepsakes. Some came to the higher ground in boats furnished by the National Guard with just the clothes on their backs.

I can only tell you my fears that night. I put part of my family in a cost guard boat not knowing if I and my father in law who was crippled would have time to wait for the next boat. My families greates personal keepsakes lost were films we had of our eight kids growing up. We lost our oldest son at 22 years and one at 4 years. Never again could we see their faces, hear their laughter or cries. Money cannot replace irrecplaceable keepsakes.

When the water went down 4 days later we proceeded back to our home only to find our home, belongings, and momentos destroyed for no reason. The stench of mud, water and dead animals was beyond comprehension.

All the Christmas gifts ruined, our kids Christmas tree twisted and ornaments broken, left us with no Christmas but we had our health and determination to see a better day ahead.

When farmers need rain they pray for it. When it rains in Valley Park we pray for fear of flooding. I invite any and all of you to visit my home town of Valley Park Missouri. We will show you first hand what the devistation of the floods of 82 and 83 did.

Page 2

Study the flood pictures observe the frustration and pain on victims faces. See grown men and women cry with despair. With F.I.M.A. guide lines of 50 percent rule we cannot rebuild to our fullest potential. Now with widening of Highway 141 we have lost what was left of our business district. A tax base we cannot recoop.

Mr. Chairman, this flood control project has been talked about since 1881. We in Valley Park have done everything we were told to do to secure funding. We have created a new zoning ordinance, building code, and additional necessary ordinances and annexations of property to create a Tax Incrimate Finance District. Which captures funds now available to pay our fair share of the levee. When I was told by Colonel Lee McKinney our levee consultant to get letters to Washington.

I formed a committee called "Project Write", in 24 days we mustard out of this small town 8,245 letters we sent to Washington. The 11 people on the committee"Project Write"worked 7 days a week and 18 hours a day to hand address, lick, and stamp the envelopes. I think the letters tell a more detailed personal account of devestation by the floods of 82 and 83. By building this levee we could rebuild this town to its fullest potential, insure a better quality of life and rid ourselves of the unbrideled violence of nature.

In closing just think of an energetic town that is ready to go full swing realizing never before ball fields, hiking trails, fishing lakes, and other things plus security and peace of mind. I hope and pray you will find it in your hearts to help us secure this sound fundable project desperately needed levee called Valley Park Flood Control Project 97-128. This would restore our pioneer spirit of pride in our town of Valley Park.

Respectfully Yours,

Richard B. Nicolas

Richard B. Nicolas
Alderman Valley Park
4 Hill Drive
Valley Park, Mo. 63088
(314) 225-5909

Valley Park School District

356 Meramec Station Road
Valley Park, Missouri 63088
314-225-4151

John J. Cleary, Ph.D.
Superintendent

Testimony of Dr. John J. Cleary, Superintendent of the Valley Park School District on March 29, 1990

VALLEY PARK FLOOD CONTROL PROJECT, LOWER MERAMEC VALLEY

Mr. Chairman. Thank you for this opportunity to appear here today to testify in support of a flood levee for the City of Valley Park.

Nine years ago, the Valley Park School District, along with residents and businesses of our community, experienced a devastating flood. The district sustained $2 million in damages. Five of our six school buildings had six to nine feet of water in them. All the elementary teachers, plus many secondary teachers lost their teaching materials, lesson plans, and personal items. For some this was 30 years' worth. Our entire school district was closed for two weeks.

Twenty-five percent of our children and their parents lost their homes, clothes and personal effects. For these children it was a double tragedy, because their home away from home -- the school -- was damaged also. The flood waters were swift and destructive, and very little was saved.

As an example of how important school was to the lives of these children, I would like to share an anecdote. A few days after the river had crested, one of our senior basketball players came down to school. His home had gone totally under water. With a smile on his face, he went looking for the basketball coach to proudly announce that when his family was desperately trying to get a few personal items out of the home he managed to save his basketball uniform.

Teachers, students, support staff, administrators, and community volunteers worked 10 to 12 hours a day to clean-up the debris and to sanitize the buildings and equipment to insure the safe return of students and staff. Every textbook and piece of paper that came in contact with flood water had to be thrown away. It was a sad sight to see band uniforms and 10,000 library books in a trash dumpster.

Secondary students returned to a near normal school routine two weeks after the river crested, but our 500 elementary children spent the next three months traveling to a rented school building in a neighboring district.

Three times since '82 the Meramec River flood has threatened to repeat itself. Teachers had to stop the educational process, pack-up all materials and move them to higher ground. At the close of each school year this same packing and moving procedure takes place to insure that the district is prepared if a flood would occur during the summer when the buildings are unstaffed.

Since the Valley Park School District is located in a flood plain, new construction is very difficult and costly. Recently, the district needed to expand the elementary school. A second floor addition had to be created for the eight new classrooms, because the construction had to take place out of the flood plain. It was very expensive to have this new addition erected on piers.

In addition to the physical cost of a flood, there is the psychological cost that can never be measured in dollar amounts. A flood causes severe interruption to the educational mission of a school district. The emotional trauma that students and staff experience impact negatively on their lives. It can take months or years for them to overcome the scars caused by such a tragedy.

Mr. Chairman, on behalf of the students and staff of the Valley Park School District, I thank you for this opportunity to speak, and I urge you to support the appropriation of the federal funding for the levee.

VALLEY PARK FIRE PROTECTION DISTRICT
OF ST. LOUIS COUNTY
840 St. Louis Ave. Valley Park, Mo. 63088

EMERGENCY
911

BUS. PHONE
225-4288
825-4286

STATEMENT ON BEHALF OF THE VALLEY PARK FIRE DISTRICT IN SUPPORT OF THE VALLEY PARK FLOOD CONTROL DISTRICT

I, Marguerite Wilburn, am present today on behalf of our Chairman, Kenneth Steele, to present this statement.

Mr. Chairman, the Board of Directors of the Valley Park Fire Protection District wishes to add their support on behalf of the Valley Park Flood Control Project, Lower Meramec Valley. Much of our Fire District lies within the Valley Park area, and our present Firehouse is within the flood plain area.

The lack of a Levee and the flood control impacts the Fire District's ability to provide emergency services, both Fire and Ambulance, to the residents of the Fire District, each time the City of Valley Park floods. In 1982, the approximate cost to the District, primarily to the Fire Station and the District's records, was approximately $13,000.00, and just five (5) months later, the historic flood of 1983 caused an additional $10,000.00 in damage to the Fire District.

The flooding in the Fire District, of course, creates an immediate need for emergency rescue of a portion of the population by emergency vehicles and boats, and the temporary abandonment by those rescued of their homes, clothing, furniture and possessions. On those occasions, the capacity of the District to respond to the emergency needs, are strained. Flooding causes slower response times, both to fire and rescue/ambulance related calls. The servicing of those immediate needs correspondently creates a diminishing ability to provide services to the population in other areas of the District not affected by the flood.

The flood control project under consideration would, of course, mean an alleviation from the threat of floods and would relieve the Fire District from stretching its resources during those times of the year previously threatened by rising water. The construction of the levy would create for the Fire District a more stable tax base and would make available for development, land in the flood plain which has been bypassed for years because of the flood problem.

The Fire District has under consideration, the construction of a second Fire Station located out of the flood plain, and strategically placed to better serve our expanding District, which Fire Station will be built through an Inter-Governmental Agreement, if this project is funded.

KENNETH STEELE, Director
EDGAR WALKER, JR., Director
MARGUERITE WILBURN, Director
WM. J. BRIGNOLE, JR., Fire Chief
CHARLES R. WILKEN, Asst. Chief

The project cannot be built without your help. The economic future of the entire area, and of the Valley Park Fire District, largely depends upon the support of the Federal Government, in providing funds for this project.

The Directors of the Valley Park Fire Protection District support this project, and we ask for your help in making it a reality.

Respectfully submitted,

Kenneth O. Steele, Chairman
Board of Directors
Valley Park Fire Protection District

THURSDAY, MARCH 29, 1990.

LITTLE DELL LAKE PROJECT, UTAH

WITNESS

HON. WAYNE OWENS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF UTAH

Mr. BEVILL. Congressman Owens, the Chair recognizes you at this time.

Mr. OWENS. I have a statement here I will enter into the record. I ask that you enter it into the record in full.

Mr. MYERS. Your entire statement will be included in the record. You may summarize if you would like.

Mr. OWENS. The Little Dell project at Immigration Canyon from Salt Lake City, John, is a very vital project to Salt Lake City, participated in by the city as well and is nearing completion. The congressional subcommittees have been very supportive of it. It is my understanding that this is the last year we will be back asking for an appropriation.

The federal request is for $9 million. The local shares will be contributed and the project completed in 1991. This is a vital flood project providing as well as recreation other aspects of the water needs of the Salt Lake City metropolitan area. You have been very kind to us in the past and we are grateful for your help.

This is now nearing completion and we ask for this final appropriation.

Mr. MYERS. It is always good to see a project that is completed. There is a lot of cooperation between you folks in Utah and us. Thank you for your testimony.

Mr. OWENS. I was just saying, Mr. Chairman, it looks like we will finish this year.

[The statements of Hon. Wayne Owens and Charles W. Wilson follow:]

STATEMENT OF WAYNE OWENS

BEFORE THE SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

IN SUPPORT OF FUNDING FOR THE LITTLE DELL PROJECT

March 29, 1990

Salt Lake City is sponsoring the Little Dell Lake, Utah Project, which will provide benefits to the metropolitan Salt Lake City area in the form of water supply, flood control, and recreation. The County has made available its share of the project costs and continues to support the completion of the project. This is an important project which should be completed.

The Little Dell Project will provide much needed flood control to Salt Lake City's 1300 South flood plain, which has experienced two major floods in recent history. The project was initiated after the 1952 spring snowmelt flood, which inundated the 1300 South area and caused large scale damage. Having been recommended by the Army Corp of Engineers, the project was authorized by Congress as a means to protect against future flooding. The project moved ahead with site investigation and preliminary planning until 1983, when the area was again hit by high snowmelt runoff and extensive damage was again suffered. As a result of that episode, the project's local sponsors and the Army Corp of Engineers signed a cooperative agreement.

Work on the project commenced in 1987 with highway relocation work, and has continued on schedule with an estimated total cost of $56,800,000. The construction of the main dam, outlet works tunnel, and related appurtenances are well under way. The Corp of Engineers is requesting $9,070,000 as the Federal Government's portion for fiscal year 1991, and estimates that the Little Dell project will be completed in that same year. I fully support this request.

**METROPOLITAN
WATER
DISTRICT OF
SALT LAKE CITY**
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Salt Lake City, Utah 84101
(801) 364-5578

Board of Directors
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Controller

March 22, 1990

Honorable Tom Bevill, Chairman
Subcommittee on Energy and Water Development
Committee on Appropriations
U. S. House of Representatives
2362 Rayburn House Office Building
Washington, D. C. 20515

Dear Honorable Chairman Bevill and Subcommittee Members:

As Chairman of the Board of the Metropolitan Water District of Salt Lake City, I am pleased to write this letter in support of the congressional funding for fiscal year 1991 regarding the Little Dell Lake, Utah, Project. This project is one of the first major water projects in the country to be constructed using a federal/local cost-sharing principle with the Federal Government providing 58% of the funds and the local interests sharing 42% of the cost. The project commenced with the relocation of State Highway #65 in 1987, which was completed at approximately $2,000,000 under the engineer's estimate. In addition, in 1988 the core-trenching and test fills contract was also completed slightly under the budget of $900,000. Total project cost is estimated to be approximately $56,800,000.

The U. S. Army Corps of Engineers is requesting $9,070,000 as the Federal Government's portion for fiscal year 1991. The main dam construction bids were opened on April 17, 1989. The project is on schedule and current estimates from the Corps of Engineers indicate that the project will be completed in the fall of 1991.

In order for the project to be completed on schedule, our District would sincerely appreciate your committee's support in providing the necessary funding for fiscal year 1991 of this important flood control and water supply project.

Sincerely,

Charles W. Wilson

Charles W. Wilson
Chairman

NPS/CWW/sba

Mr. **Bevill**. I also have a letter from the sponsor of the Little Dell Lake project, which we will include in the record at this point.

[The information follows:]

M. TOM SHIMIZU
Commissioner
Salt Lake County Commission
Salt Lake County Government Center
2001 S State St #N2100
Salt Lake City, Utah 84190-1000
Telephone 468-3350

March 22, 1990

HONORABLE TOM BEVILL, Chairman
Subcommittee on Energy and Water Development
Committee on Appropriations
U.S. House of Representatives
2362 Rayburn House Office Building
Washington, D.C. 20515

Dear Mr. Chairman:

Please consider the attached as written testimony for your subcommittee, in support of the Little Dell Lake Utah Project. If you have any questions or need any additional information let me know.

Thank you for your consideration.

M. Tom Shimizu
M. TOM SHIMIZU, Commissioner
Salt Lake County Board of Commissioners

MTS/NDS/cb

cc: R. T. Holzworth

SPONSOR STATEMENT FOR

LITTLE DELL LAKE, UTAH PROJECT

SALT LAKE COUNTY, UTAH

March 23, 1990

Salt Lake County, as a sponsor of this most important project, has followed the construction of this dam with great anticipation of the benefits in water supply, flood control and recreation this project will provide our community. The County has made available its share of the project costs and continues to support the completion of the project.

The requested fiscal year 1991 appropriation will continue the construction of the main dam, outlet works tunnel and related appurtenances. This construction is well under way with foundation grouting, tunneling, portal excavation, and stockpiling of materials. Previously, the relocations of State Highway 65 and utilities were accomplished during the 1987 construction season and the dam core trench excavation and test fills were completed during the summer construction of 1988.

The Little Dell Lake, Utah Project will provide much needed flood control to Salt Lake City's 1300 South floodplain which has experienced two major floods in recent history. The project was initiated after the 1952 spring snowmelt flood which inundated the 1300 South floodplain inflicting large scale damage and causing significant cleanup expenses. The Army Corps of Engineers was asked to assist in controlling future floods and their recommendation was to construct the Little Dell Lake, Utah Project. Subsequently, the project was authorized by Congress under the 1968 Flood Control Act and Water Resources Development Act of 1976. The project moved ahead with site investigation and preliminary planning until 1983, when the area was again hit with high snowmelt runoff which required extensive flood control efforts to avoid widespread flooding. As a result of this episode and through the resolve of the local sponsors and the assistance of the state's Congressional Delegation, the project was initiated on June 10, 1986, when the local sponsors and the Army Corps of Engineers, signed the Local Cooperative Agreement in Salt Lake City.

THURSDAY, MARCH 29, 1990.

SOUTH DAKOTA PROJECTS

WITNESS

HON. TIM JOHNSON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF SOUTH DAKOTA

Mr. BEVILL. Next we have Congressman Tim Johnson from South Dakota. Tim, we are glad to hear you.

Mr. MYERS. We have heard from your constituents already. We have to fit people in because we are running behind.

Mr. JOHNSON. I understand that. The people who know the most and have committed 25 years or more to this project have already spoken.

I will be very brief with my remarks and I will submit my statement for the record. I do, however, want to give some special emphasis for my support for the Mni Wiconi Rural Water Project. It was your action last year in appropriating $500,000 for that project that made it possible.

We will require $1.5 million more in fiscal year 1991 in the Bureau of Reclamation budget. As you know, the water standards of this immense area in western South Dakota do not meet the standards of the Safe Drinking Water Act due to high levels of total dissolved solids, sodium, sulfates, chlorides, iron, and even radium. Many Reservation water sources are increasingly polluted with biological contaminants. Obviously, the poor water throughout the project area contributes to the health problems in the region. Diabetes, kidney disease, hypertension and a high infant mortality are particularly prevalent on the Reservation. On average across the project area, drinking two and one-half quarts of water per day for a year is equivalent to drinking two pounds of rock.

The rural economy is in dire need of this assistance. Shannon County at the end of this project is one of the counties of the Pine Ridge Indian Reservation, and it is the second poorest county in the nation with per capita income averaging $3,943 and unemployment exceeding 80 percent. I am confident that by providing one of life's key commodities to this region, Congress will take a fundamental step in meeting its trust responsibility to this Indian community.

Mr. Chairman, the Bureau of Reclamation has indicated that it has the capability to use $1.5 million on the Mni Wiconi Project in fiscal year 1991. I am also pleased that the Interior Committee has come out in strong support for this project. The state has also appropriated $1.5 million to be used as non-federal matching funds, and the state has entered into contracts to use those funds. This project is the flagship of our water development. It is so dire because we need it so badly in South Dakota. We are very appreciative of the support you have extended to this project in the past.

We appreciate the very, very difficult financial environment this committee finds itself in this year. We certainly hope that you will give careful consideration to the needed funding to continue on with this badly needed project for our citizens, white and Native American alike, across western South Dakota.

Thank you very much for your consideration.

Mr. **Bevill**. Thank you. We will certainly work with you and do the best we can.

[The statement of Hon. Tim Johnson follows:]

TESTIMONY OF THE HONORABLE TIM JOHNSON

SOUTH DAKOTA WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 1991

ENERGY AND WATER DEVELOPMENT
APPROPRIATIONS SUBCOMMITTEE

MARCH 29,1990

Mr. Chairman, I wish to begin by thanking you for allowing me to testify this afternoon on behalf of the water development needs of South Dakota. I appreciate the work you and the Committee have done in the past through your support for sound water development. As you know, the West has many crucial water needs, from rural water delivery to flood control, and I appreciate the leading role that your Committee has taken, Mr. Chairman, in addressing these needs. I especially want to thank you, Mr. Chairman and members of the Committee, for your past support of South Dakota and all rural America.

We are faced with an ever tightening federal budget, and I do not envy the choices your Committee has to make this year. However, we have definite needs in our country that must be addressed. South Dakota has several pressing needs, and as Representative for the entire state, I would like to address the projects that I believe are deserving of funding for Fiscal Year 1991.

Last year, the Committee supported the Mni Wiconi Rural Water Supply Project, Public Law 100-516, by appropriating $500,000 for initial funding of this vitally important rural water delivery project. The Mni Wiconi Project has worked closely with the Bureau of Reclamation and will utilize its FY 90 funding. I urge the Committee to continue its strong support for this project by including $1,500,000 for the Mni Wiconi Rural Water Supply Project in the Bureau of Reclamation budget for Fiscal Year 1991. This funding will allow for the continued development of the project by providing $1,000,000 for planning and investigations to complete the engineering report and National Environmental Policy Act (NEPA) compliance and $500,000 for design data collection and initiation of final design activities so that actual construction of facilities could begin in Fiscal Year 1992.

As you know, the Mni Wiconi Project will provide reliable, good quality drinking water to south central South Dakota, including the approximately 13,000 residents of the Pine Ridge Indian Reservation. Water delivery for many members of the Oglala Sioux Tribe on the Pine Ridge Indian Reservation currently means driving or walking for miles to a community pump, filling up five gallon buckets or barrels with water and returning home. Drilling a well in this region can range up to $50,000.

On top of expense and difficulty in obtaining water, the water quality in the project area is abysmal. Most water sources, whether community water supplies or personal wells, do not meet standards set by the Safe Drinking Water Act due to high levels of total dissolved solids, sodium, sulfates, chlorides, iron, and even radium. Many Reservation water sources are increasingly polluted with biological contaminants. Obviously, the poor water throughout the project area contributes to the health problems in the region. Diabetes, kidney disease, hypertension and a high infant mortality are particularly prevalent on the Reservation. On average across the project area, drinking two and one-half quarts of water per day for a year is equivalent to drinking two pounds of rock.

In addition to improving the health of residents in the region, I strongly believe that this water delivery project will stabilize the rural economy. Water is a basic commodity and is essential if we are to ever foster new rural development. Several communities have lost new businesses because of questions over water quality. Water development and economic development are especially important in helping the residents of the Pine Ridge Indian Reservation break the cycle of poverty. Shannon County, which is one of the counties of the Pine Ridge Indian Reservation, is the second poorest county in the nation with per capita income averaging $3,943 and unemployment exceeding 80%. I am confident that by providing one of life's key commodities to this region, Congress will take a fundamental step in meeting its trust responsibility to this Indian community

Mr. Chairman, the Bureau of Reclamation has indicated that it has the capability to use $1,500,000 on the Mni Wiconi Project in FY 91. This answer was elicited in response to questions I submitted to the Bureau of Reclamation when Commissioner Underwood appeared before your Committee earlier this year. The Bureau of Reclamation has worked closely with the Project sponsors at the Regional level; however, I recognize the unfortunate fact that Congress must undeniably declare its support and intent for new projects such as Mni Wiconi by inserting funding in the budget for two to four years before the Administration will begin to request funding.

In addition, the Interior and Insular Affairs Committee came out in strong support of the Mni Wiconi Project in its report to the Budget Committee on proposed levels of spending authority for 1991 and recommended that funding for Mni Wiconi be provided.

The South Dakota state legislature appropriated $1,500,000 to be used as the non-federal matching funds, and the State has entered into contracts to use those funds. Last years news of Congressional appropriations and support for the Project resulted in additional local and statewide support, including an increase in household and pasture services in the West River and Lyman Jones Systems. Door to door surveys on the Pine Ridge Indian Reservation demonstrate almost unanimous request for water service.

The need for this project is great, and I will continue to work for its full development. I thank the Committee for its consideration of my request for $1,500,000.

Mr. Chairman, I would also urge the Committee to fund the following Bureau of Reclamation General Investigation Projects at the necessary levels: Lake Andes Wagner/Marty II Selenium Mitigation Demonstration Program--$500,000; Black Hills Hydrology Study--$100,000; Southeastern South Dakota Water Supply--$100,000.

The Lake Andes Wagner/Marty II project sponsors have been working for years to develop an irrigation/wetland enhancement project for the central part of the state which would stabilize the local agricultural economy and improve important wetlands in the Central Flyway. South Dakota is entering its third year of drought which highlights the need for sound irrigation practices. This irrigation project would allow for crop diversification as well as new crop processing facilities, which would be assured of a reliable crop supply. The economic benefits of this project would be particularly welcome on the Marty II portion of the project which is controlled by the Yankton Sioux Tribe. A Senate hearing was held on this project last year as the first step in the authorization process. At that time, it was determined that additional studies were needed in the Marty II portion of the project to comply with NEPA review requirements. Subsequent soil and groundwater sampling found varying levels of the trace element selenium across the project area.

The Lake Andes-Wagner/Marty II Project sponsors want an environmentally sound irrigation project, and for that reason the sponsors have been working with the Bureau of Reclamation, the U.S. Fish and Wildlife Service, the Environmental Protection Agency, the U.S. Geological Survey, the Bureau of Indian Affairs, the South

Dakota Department of Game, Fish and Parks, and the South Dakota Department of Water and Natural Resources to develop a demonstration project that will mitigate selenium. Information gained from this demonstration project will have national application regarding the mitigation of selenium, a problem which has plagued irrigation projects across the nation, as well as proving that we can go forward with the Lake Andes-Wagner/Marty II irrigation project in South Dakota.

The Bureau of Reclamation has made a commitment to support the authorization of a demonstration program, and in preparation for federal authorization, $500,000 is required to complete the study site selection, develop engineering and construction requirements, obtain right-of-ways, analyze existing trace element data and inventory wetlands.

The Black Hills hydrology study would investigate the complex hydrologic system in the Black Hills. The drought, which is entering its third year, has had a major negative impact on the water resources in the region, and the Black Hills system is increasingly stressed by the expansion of mining, urban growth and recreation development as well as by existing irrigation and drinking water needs. Little is known about the hydrology of the Black Hills and this information is essential to the sound management of our water resources. The full Black Hills hydrology study is an estimated $10,000,000 effort over the course of at least 10 years, and the $100,000 I have requested for FY 91 would provide for the Bureau of Reclamation's involvement in an interagency planning group that is developing a study plan.

The $100,000 I have requested for the Southeastern South Dakota Water Supply Project would provide for the involvement of the Bureau of Reclamation in the development of a needs assessment, planning studies, and engineering design criteria in preparation for federal authorization of this proposed water project. Southeastern South Dakota has seen significant growth and development in recent years, and studies have shown that future water needs will be significantly greater than the current available supply. The proposed system would provide water to Sioux Falls, which is South Dakota's largest city, as well as numerous communities and individual farms in the area. A Memorandum of Understanding on the matter has been signed by 18 local communities and all nine rural water systems located in the area. Close to $70,000 has already been raised by project sponsors to provide a local cost-share for the feasibility study.

In addition, Mr. Chairman, there are several Bureau of Reclamation Projects in my state that are part of the President's budget, and I would like to lend my strong support to these funding needs, including $945,000 for the W.E.B. project, which will allow for the completion of this important rural water delivery project. The W.E.B. project has been within its budget and is being delivered on time. I believe the W.E.B. project is an excellent example of how a rural water supply system should be built and operated, and I look forward to this model being replicated in South Dakota and across the nation.

The rehabilitation of the Belle Fourche Irrigation Unit continues on schedule, and I strongly support the $8,024,000 for this project that has been requested in the President's budget. I appreciate the support the Committee has shown the nation's first Bureau of Reclamation irrigation project over the years, and I am hopeful this support continues.

Mr. Chairman, there are also several Corps of Engineers projects in my state that require funding, including $100,000 for a reconnaissance and feasibility study of the Vermillion Basin; $1,260,00 for Missouri River Bank Stabilization required along the stretch designated as a National Recreation River; $1,000,000 for Missouri River Mitigation; and $3,000,000 for additional Missouri River Bank Stabilization.

The Vermillion Water Basin in southeastern South Dakota, outside of my hometown of Vermillion, is subject to severe flooding due in part to poor drainage. This flooding has a severe impact on the economy of the area and action is needed to find a solution to this serious problem. Last year, I was very pleased that this Committee requested $100,000 for this project; unfortunately, this funding did not survive through the Conference with the Senate, so I am forced to return again to try to secure funding for this much needed project.

Next week, this Committee will hear testimony from the Missouri River Bank Stabilization Association. I strongly support the Association's request for $1,260,000--$200,000 which is crucial to operation and maintenance of works already completed along the river and $1,060,000 for new construction. This project stretches for 59 miles between the Gavins Point Dam, near Yankton, South Dakota and the Ponca State Park, near Ponca, Nebraska. This stretch below the Gavins Point Dam has been designated by Congress as the Missouri National Recreational River since it is the last portion of the Missouri that remains in its natural state. However, the Missouri River is eating away at its banks, a situation exacerbated by releases from Gavins Point Dam that are determined by such factors as navigation needs, hydro-electric generation, and flood control. If we fail to take action to preserve this stretch, we may end up with a river 3 miles wide and 2 feet deep.

The State of South Dakota has requested $1,000,000 for Missouri River Mitigation due to losses incurred from the development of Oahe and Big Bend dams and reservoirs and $3,000,000 for Missouri River Bank Stabilization above the Gavins Point Dam, and I would like to express my support for this funding.

Several Corps of Engineers projects were included in the President's budget request, and I support the funding levels requested, including $186,000 for the James River Basin; $94,000 for the Big Sioux River, Sioux Falls; and $148,000 for the Watertown and Vicinity flood control project as well as the necessary funds for the Operation and Maintenance of the Missouri River Dams and Reservoirs.

The James River Basin Project is an exemplary environmental restoration and flood control project, and I strongly support the work the sponsors are doing in improving the river and local habitat. The sponsors have worked with communities and individuals up and down the river in cooperative ventures to clean up the river, improve habitat and better control flooding. I look forward to the continued development of this unique environmental/flood control project, and I appreciate the Committee's support.

The Big Sioux River and Watertown projects are also essential to controlling flooding in their respective areas. As you well know, flooding can be devastating to the local economy Fortunately, this problem can be controlled, and I appreciate the Committee's continued support for flood control projects.

Mr. Chairman, I appreciate the time you have given me this afternoon to outline the funding needs for South Dakota water development. I also want to thank you for your consideration of my requests. South

Dakota is plagued by water of exceedingly poor quality, and the Mni Wiconi Rural Water Supply Project is another effort to help provide clean water--a commodity most of us take for granted--to the people of South Dakota. Sound water development is crucial to our state, whether it be rural water delivery, wetland and wildlife enhancement, irrigation or flood control. These projects stabilize the rural economy and greatly contribute to rural economic development since water is a vital component to ensure future growth. I appreciate the time and hard work the Committee has devoted to developing water infrastructure, especially the efforts of the Committee in meeting the needs of South Dakota and all rural America. I look forward to continued close cooperation with the Committee to meet the needs of our nation.

Mr. **Bevill**. We have also received a statement from the South Dakota Department of Natural Resources, which we will include in the record at this point.

[The information follows:]

SOUTH Dakota Department of
Water & Natural Resources
Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

February 23, 1990

Hunter Spillan
Energy and Water Development Subcommittee
2362 Rayburn House Office Building
Washington, DC 20515

Dear Mr. Spillan:

The South Dakota Department of Water and Natural Resources (the Department) has reviewed the President's FFY 1991 budget request for the U.S. Army Corps of Engineers Civil Works and the Bureau of Reclamation water resource projects in South Dakota.

Enclosed is written testimony that the Department respectfully submits to the House Energy and Water Development subcommittee for its consideration at the scheduled outside witness hearings for the Corps Civil Works and Bureau of Reclamation appropriation requests. If the Subcommittee has any questions or needs additional information regarding this testimony, please contact the Department at your convenience.

Your assistance in this matter is appreciated.

Sincerely,

Floyd Matthew, Secretary
Department of Water and
Natural Resources

Enclosure

cc: Congressman Tim Johnson

CELEBRATE THE CENTURY
1889 · 1989
South Dakota

WRITTEN TESTIMONY OF

SOUTH DAKOTA DEPARTMENT OF WATER AND NATURAL RESOURCES

ON

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS

PRESENTED TO

SUBCOMMITTEE ON ENERGY & WATER DEVELOPMENT
COMMITTEE ON APPROPRIATIONS
UNITED STATES HOUSE OF REPRESENTATIVES

FEBRUARY 23, 1990

SOUTH DAKOTA DEPARTMENT OF WATER & NATURAL RESOURCES
WRITTEN TESTIMONY ON
ENERGY AND WATER DEVELOPMENT APPROPRIATIONS

February 23, 1990

The South Dakota Department of Water and Natural Resources (the Department) has reviewed the funding levels for energy and water development programs contained in the Budget of the U.S. Government - FY 1991 as proposed by President Bush. The budget requests for the Civil Works program of the Army Corps of Engineers and the Bureau of Reclamation will dictate South Dakota water development program activities to be undertaken in 1991.

The following provides the FFY 1990 Congressional conference allowance, the Administration's FFY 1991 budget request, and South Dakota anticipated funding needs for water development. The State of South Dakota fully recognizes the non-federal cost share responsibilities for new water development projects and we intend to meet these obligations.

BUREAU OF RECLAMATION

	FFY 1990 CONFERENCE ALLOWANCE	FFY 1991 PROPOSED BUDGET	FFY 1991 SO. DAK.'s REQUEST
General Investigations			
Lake Andes-Wagner/Marty II	0	0	$ 250,000
Black Hills Hydrology Study	0	0	100,000
Southeastern SD Water Supply	0	0	100,000
Construction			
WEB	$14,304,000	$ 945,000	$ 945,000
Belle Fourche	6,765,000	8,024,000	8,024,000
Oahe Unit	65,000	65,000	65,000
Mni Wiconi	50,000	0	2,000,000
Groundwater Recharge	7,300,000	4,500,000	7,300,000
Operation & Maintenance	N/A	$ 471,000	$ 471,000

The Department supports the funding requests for completion of the WEB rural water system construction, continuation of the rehabilitation of the Belle Fourche irrigation project, site safety and security work on the Oahe

Unit, and the operation and maintenance budget request for Reclamation activities in South Dakota. Additional funding needs have been identified for General Investigation activities in South Dakota, the Mni Wiconi rural water supply project and the Groundwater Recharge Demonstration program. The General Investigation activities would provide for the Bureau of Reclamation's involvement in the planning phase of the Lake Andes-Wagner / Marty II (LA-W/M) demonstration research program, the Black Hills Hydrology study, and the Southeastern South Dakota water supply system. The LA-W/M demonstration research program will address drainage needs in glacial till soils, selenium management techniques, and the development of best management practices for irrigation. The $250,000 funding level would support design activities and negotiation of interagency and landowner agreements.

With expansion of mining, urban and recreation development in the Black Hills, the potential for adverse effects on the water resources of the region must be addressed. The Black Hills is a complex hydrologic system and data to make informed management decisions regarding increased demand is not available. The Black Hills Hydrology study is an estimated $10 million study effort to evaluate the groundwater and surface water relationships and the quantity and quality of water resources. The requested funding would provide for the Bureau of Reclamation's involvement in an interagency planning group developing a long range comprehensive study plan.

The Southeastern South Dakota water supply system was added to South Dakota's state water resources management system in 1989. The project would deliver Missouri River water to southeastern South Dakota for rural, domestic, and industrial purposes. A nonprofit corporation of interested cities and rural water systems has been formed to coordinate local study efforts and to provide cost share. The requested funding would provide for the Bureau of Reclamation's active involvement in the development of a needs assessment, planning studies, and engineering design criteria.

The Mni Wiconi water supply system was authorized in 1988 and received its initial construction appropriation for FFY 1990 for needs assessment, design criteria, and water conservation plan development. The Bureau of Reclamation is in the process of developing cooperative agreements with the Oglala Sioux Tribe and the Mni Wiconi Cooperative, Inc. to complete these tasks. It is critical that FFY 1991 funding is available for completion of final engineering reports, NEPA compliance activities, and preparation of design specifications to initiate construction in 1992. By October 1, 1990, the indexed Federal cost share will have increased to nearly $96.9 million from $87.5 million. Inadequate funding support will further increase the total cost of the project and delay the delivery of an adequate and safe drinking water supply to 20,000 western South Dakota residents. The completion of the WEB system construction in FFY 1991 provides an opportunity to commit a portion of the Reclamation rural water supply construction effort to another South Dakota project. The Department requests consideration of a $2,000,000 appropriation for Mni Wiconi.

The High Plains States Groundwater Demonstration Program Act of 1983 authorized special studies in seventeen western states, including South Dakota, to assess the potential for recharge of groundwater aquifers. A recharge demonstration site near Huron, South Dakota was selected during the planning phase (Phase I) of this program. The FFY 1991 budget request supports the design, construction, operation, and evaluation phase (Phase II) of the program. Reclamation has indicated that while $8,300,000 would be necessary to fully implement Phase II, the proposed funding level ($4,500,000) would provide for Phase II activities at the South Dakota site. The Department supports maintaining funding support for the groundwater recharge demonstration project at the FFY 1990 level of $7.3 million.

CORPS OF ENGINEERS

	FFY 1990 CONFERENCE ALLOWANCE	FFY 1991 PROPOSED BUDGET	FFY 1991 SO. DAK.'s REQUEST
General Investigations			
James River Basin	$ 175,000	$ 186,000	$ 186,000
Big Sioux River, Sioux Falls	89,000	94,000	94,000
Watertown & Vicinity	171,000	148,000	148,000
Vermillion Basin	0	0	100,000
Planning Assistance to States (Section 22)	30,000	85,000	150,000

CORPS OF ENGINEERS (cont.)

	FFY 1990 CONFERENCE ALLOWANCE	FFY 1991 PROPOSED BUDGET	FFY 1991 SO. DAK.'s REQUEST
Construction			
Missouri River Mitigation	0	0	$1,000,000
Mo. River Bank Stabilization	0	0	3,000,000
Operation & Maintenance			
Gavins Point/Lewis & Clark	$4,225,000	$5,144,000	$5,144,000
Big Bend/Lake Sharpe	5,249,000	6,651,000	6,651,000
Ft. Randall/Francis Case	6,666,000	7,334,000	7,334,000
Oahe/Lake Oahe	8,545,000	8,006,000	8,006,000
Cold Brook Lake	182,000	274,000	274,000
Cotton Springs Lake	158,000	147,000	147,000

The Department supports the proposed funding levels for the following Corps of Engineers' flood damage prevention projects: Big Sioux River, Sioux Falls, SD; James River Basin, SD; and Watertown & Vicinity (Big Sioux River), SD. The Department supports the operation and maintenance budget requests for the four Missouri River mainstem dams and reservoirs and for the Cold Brook Lake and Cotton Springs Lake facilities. Additional funding needs have been identified for the Section 22 Planning Assistance program, a Vermillion Basin flood control study, and for Missouri River wildlife mitigation and bank stabilization efforts above Gavins Point.

The Department requests $150,000 for Section 22 assistance in South Dakota. The Section 22 program provides crucial assistance to the South Dakota water development planning process. In FFY 1989, the Corps provided nearly $160,000 of technical services in South Dakota under the Section 22 program. These services range from lab analyses to assist South Dakota's groundwater quality and lakes improvement programs to intake studies for communities and rural water systems relying on the drought impacted Missouri River for a water supply. The continuing drought and South Dakota's water resources management needs require the increased planning assistance we are requesting.

The Department supports an appropriation for a reconnaissance and feasibility study of the Vermillion River and its tributaries. Flooding in the Vermillion River Basin became much more severe in the 1980s. The South Dakota State Legislature placed the Vermillion Basin flood control study on the state water resources management system in 1987. In 1988, the Vermillion Basin Water Project District was awarded a $50,000 state grant to begin study of flood control alternatives. In 1990, State legislation was passed to provide for the creation of a Vermillion Basin Water Development District to further support project efforts.

Federal Missouri River mitigation and bank stabilization efforts above Gavins Point dam have been funded under the Corps' operation and maintenance budgets while below Gavins Point, line item appropriations have been requested and approved. The Department requests an appropriation of $3,000,000 for bank stabilization activities in South Dakota along the Missouri River above Gavins Point. Bank stabilization at existing Corps recreational facilities is a priority. The low water levels that the mainstem Missouri River reservoirs are currently experiencing provide an opportunity to construct the bank stabilization structures utilizing land based equipment.

The Mni Wiconi authorizing legislation (P.L. 100-516 - Section 6 b.) directed the Corps to develop and submit recommendations for financing and implementing mitigation plans for fish and wildlife losses due to the development of Oahe and Big Bend dams and reservoirs. The Department requests an appropriation of $1,000,000 for mitigation activities in South Dakota along the Missouri River above Gavins Point.

The Department appreciates this opportunity to provide input to the FFY 1991 budget process. The land and water resources of South Dakota provide the economic cornerstones for the state. In this semi-arid region, an aggressive water development program is necessary if we are to remain in the economic mainstream of America. Thank you for your consideration of this testimony.

SOUTH Dakota Department of
Water & Natural Resources
Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

March 29, 1990

The Honorable Tom Bevill, Chairman
Subcommittee on Energy and Water Development
United States House of Representatives
Washington, DC 20515

Dear Congressman Bevill:

The South Dakota Department of Water and Natural Resources (the Department) submitted written testimony on energy and water development appropriations for FFY 1991. This letter serves to revise the funding level requested for Bureau of Reclamation - General Investigations in South Dakota.

The Department's revision increases the budget authority request for the Lake Andes - Wagner/Marty II research demonstration program to $500,000 from $250,000. This funding level is based on a revised estimate of first year work requirements prepared by the Bureau of Reclamation on March 26, 1990.

Enclosed is a summary of the Department's funding requests by project. If the Subcommittee has any questions or needs additional information regarding these matters, please contact the Department at your convenience.

Your consideration of the Department's testimony is greatly appreciated.

Sincerely,

Reese Peck for
Floyd Matthew, Secretary
Department of Water and
Natural Resources

Enclosure

cc: Congressman Tim Johnson

CELEBRATE THE CENTURY
1889 - 1989
South Dakota

BUREAU OF RECLAMATION

	FFY 1990 CONFERENCE ALLOWANCE	FFY 1991 PROPOSED BUDGET	FFY 1991 SO. DAK.'s REQUEST
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Black Hills Hydrology Study	0	0	100,000
Southeastern SD Water Supply	0	0	100,000
Construction			
WEB	$14,304,000	$ 945,000	$ 945,000
Belle Fourche	6,765,000	8,024,000	8,024,000
Oahe Unit	65,000	65,000	65,000
Mni Wiconi	500,000	0	2,000,000
Groundwater Recharge	7,300,000	4,500,000	7,300,000
Operation & Maintenance	N/A	$ 471,000	$ 471,000

CORPS OF ENGINEERS

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Vermillion Basin	0	0	100,000
Planning Assistance to States (Section 22)	30,000	85,000	150,000
Construction			
Missouri River Mitigation	0	0	$1,000,000
Mo. River Bank Stabilization	0	0	3,000,000
Operation & Maintenance			
Gavins Point/Lewis & Clark	$4,225,000	$5,144,000	$5,144,000
Big Bend/Lake Sharpe	5,249,000	6,651,000	6,651,000
Ft. Randall/Francis Case	6,666,000	7,334,000	7,334,000
Oahe/Lake Oahe	8,545,000	8,006,000	8,006,000
Cold Brook Lake	182,000	274,000	274,000
Cotton Springs Lake	158,000	147,000	147,000

THURSDAY, MARCH 29, 1990.

OCEAN CITY BEACH PROTECTION, MARYLAND

WITNESS

HON. ROY DYSON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MARYLAND

Mr. BEVILL. Next we have our good friend and colleague, Congressman Roy Dyson. We are always glad to hear from you.

Mr. DYSON. Thank you very much, Mr. Chairman.

It is always nice to be here. You have been very receptive. In my 10 years here I don't think there is a year that I have not appeared before your subcommittee. Thank you for making this opportunity available to me today. You obviously know why I am here. The Atlantic Coast of Maryland's Protection project. If we have made any progress at all on this project it is due, in my thinking, to the support it received by this subcommittee.

You have taken a keen interest in the efforts put forward by the Corps of Engineers and Maryland state officials to design a cost effective, practical hurricane protection project.

You have followed the development of plans, the negotiations between state, county and federal officials, and the completion of preparatory work at the state level.

Last year, your subcommittee approved $8.2 million for the first year of federal work on the project.

Now, at long last, the Administration has recognized the value of moving ahead with the project, and the support you have provided has borne fruit.

Let me take a moment to recap the project. As you know, Mr. Chairman, every summer Ocean City's normal population of 9,000 year round residents swells to more than 350,000 as vacationers from across the State and throughout the Atlantic seaboard flock to the shore. Its real property is assessed at more than $2.5 billion, nearly half of which is insured by the Federal Government.

Yet the city's natural defenses against the devastating force of severe hurricanes and north Atlantic storms has worn dangerously thin over the past decades. The city and its people are exposed and vulnerable, and the project we are reviewing today will offer Ocean City the protection it needs to survive the worst effects of a life threatening storm surge.

That project will shield Ocean City's boardwalk with 10,000 feet of sheetsteel bulkheading. It will rebuild the island's barrier dune and broaden its beach to 165 feet. Together, these steps will insulate the city and its people for the next 100 years or so.

The funding your subcommittee provided last year will be spent during this fiscal year. The project managers have already acquired all the real estate—usually easements—needed to complete the project.

All environmental permits for the project have been secured. The general design memoranda has been approved, as has the final "local cooperation agreement" between State, county and Federal authorities. All plans and specifications for final construction of the beach, dune and bulkheads have been approved.

Contracts for the beach and barrier dune construction will be awarded this May for work that will be done through October of this year.

Contracts for the bulkhead will be awarded in June and actual construction will begin in October.

Mr. Chairman, the District Engineer predicts that all work can be completed by the fall of 1991, and the Hurricane Protection Project can be finished in its entirety, if an appropriation of $26 million is approved for the coming fiscal year.

The Administration's request proposes to defer $12 million of that funding, and recommends an appropriation of $14 million.

Mr. Chairman, as long as that project is under construction, it is like a house that is only half-finished. Once completed, it can shelter a family against the ravages of the most destructive storm. But so long as it is "under construction" it can be ruined by even lighter winds and milder storms.

To defer this project—to drag it on for another two or three fiscal years—ensures that it will grow more expensive to finish. It prolongs the city's exposure and vulnerability. It increases the risk that a major storm will wreck the progress that has already been made and raises the potential for catastrophic loss of fire and property.

I am therefore requesting that the subcommittee approve a request for $26 million, as recommended by the district engineer, so that this project can be completed on schedule. Such a move will reduce the project's final costs, protect the city now rather than later, and possibly avert the very disaster we are seeking to prevent.

In closing, Mr. Chairman, let me once again thank you and your subcommittee for their attention, consideration and support of this project. It means much to the taxpayers of the State of Maryland, who have already invested more than $11 million to prepare the construction site for completion and who will share in all future costs of the project.

Your support has meant a great deal to the people of Ocean City and to its summer time visitors, and it has meant a great deal to me personally.

I will be supplying the subcommittee with a detailed spreadsheet describing the schedule of contracts and construction that will bring this project to completion in a timely fashion. I respectfully urge you to approve this request for sufficient funding to close this project out, and I will be happy to respond for the record any questions you, the subcommittee members or staff may have regarding the project.

Let me once again thank you personally. It would not be happening if it was not for you all. I am very much indebted to you. I know a lot of people are. We had a major storm this weekend. If you were in the area, you woke up to snow. We had a tremendous storm coming off the ocean. I was there with the mayor. We could not see any damage whatsoever. So notwithstanding what some of our critics have said, it does work. It has been working. I was quite impressed. I did not see any erosion whatsoever.

At the worst spot at 70th Street there was none whatsoever. We owe that to you.

I am very much indebted to you. You have been a tremendous help. I don't want you to get tired of hearing thank you, but I want to say thank you one more time.

Mr. **Bevill**. We will do the best we can.

Mr. **Dyson**. I do appreciate what you have done for us. Thank you both.

[The statement of Hon. Roy Dyson follows:]

The Honorable Roy Dyson

March 29, 1990

Statement before the Appropriations Subcommittee

Energy and Water Development

GOOD AFTERNOON, MR. CHAIRMAN, AND THANK YOU FOR MAKING AVAILABLE TO ME THIS OPPORTUNITY TO REVIEW WITH THE SUBCOMMITTEE THE PROGRESS OF THE ATLANTIC COAST OF MARYLAND HURRICANE PROTECTION PROJECT.

THAT WE HAVE MADE ANY PROGRESS AT ALL ON THIS IMPORTANT PROJECT IS DUE, IN MY THINKING, TO THE SUPPORT IT HAS RECEIVED FROM THIS SUBCOMMITTEE. YOU HAVE TAKEN A KEEN INTEREST IN THE EFFORTS PUT FORWARD BY THE CORPS OF ENGINEERS AND MARYLAND STATE OFFICIALS TO DESIGN A COST EFFECTIVE, PRACTICAL HURRICANE PROTECTION PROJECT.

YOU HAVE FOLLOWED THE DEVELOPMENT OF PLANS, THE NEGOTIATIONS BETWEEN STATE, COUNTY AND FEDERAL OFFICIALS, AND THE COMPLETION OF PREPARATORY WORK AT THE STATE LEVEL.

LAST YEAR, YOUR SUBCOMMITTEE APPROVED $8.2 MILLION FOR THE FIRST YEAR OF FEDERAL WORK ON THE PROJECT.

NOW, AT LONG LAST, THE ADMINISTRATION HAS RECOGNIZED THE VALUE OF MOVING AHEAD WITH THE PROJECT, AND THE SUPPORT YOU HAVE PROVIDED HAS BORNE FRUIT.

LET ME TAKE A MOMENT TO RECAP THE PROJECT. AS YOU KNOW, MR. CHAIRMAN, EVERY SUMMER OCEAN CITY'S NORMAL POPULATION OF 9,000 YEAR ROUND RESIDENTS SWELLS TO MORE THAN 350,000 AS VACATIONERS FROM ACROSS THE STATE AND THROUGHOUT THE ATLANTIC SEABOARD FLOCK TO THE SHORE. IT'S REAL PROPERTY IS ASSESSED AT MORE THAN $2.5 BILLION DOLLARS, NEARLY

HALF OF WHICH IS INSURED BY THE FEDERAL GOVERNMENT.

YET THE CITY'S NATURAL DEFENSES AGAINST THE DEVASTATING FORCE OF SEVERE HURRICANES AND NORTH ATLANTIC STORMS HAS WORN DANGEROUSLY THIN OVER THE PAST DECADES. THE CITY AND ITS PEOPLE ARE EXPOSED AND VULNERABLE, AND THE PROJECT WE ARE REVIEWING TODAY WILL OFFER OCEAN CITY THE PROTECTION IT NEEDS TO SURVIVE THE WORST EFFECTS OF A LIFE THREATENING STORM SURGE.

THAT PROJECT WILL SHIELD OCEAN CITY'S BOARDWALK WITH 10,000 FEET OF SHEETSTEEL BULKHEADING. IT WILL REBUILD THE ISLAND'S BARRIER DUNE AND BROADEN ITS BEACH TO 165 FEET. TOGETHER, THESE STEPS WILL INSULATE THE CITY AND ITS PEOPLE FOR THE NEXT 100 YEARS OR SO.

THE FUNDING YOUR SUBCOMMITTEE PROVIDED LAST YEAR WILL BE SPENT DURING THIS FISCAL YEAR. THE PROJECT MANAGERS HAVE ALREADY ACQUIRED ALL THE

REAL ESTATE --USUALLY EASEMENTS-- NEEDED TO COMPLETE THE PROJECT.

ALL ENVIRONMENTAL PERMITS FOR THE PROJECT HAVE BEEN SECURED. THE GENERAL DESIGN MEMORANDA HAS BEEN APPROVED, AS HAS THE FINAL "LOCAL COOPERATION AGREEMENT" BETWEEN STATE, COUNTY AND FEDERAL AUTHORITIES. ALL PLANS AND SPECIFICATIONS FOR FINAL CONSTRUCTION OF THE BEACH, DUNE AND BULKHEAD HAVE BEEN APPROVED.

CONTRACTS FOR THE BEACH AND BARRIER DUNE CONSTRUCTION WILL BE AWARDED THIS MAY FOR WORK THAT WILL BE DONE THROUGH OCTOBER OF THIS YEAR.

CONTRACTS FOR THE BULKHEAD WILL BE AWARDED IN JUNE AND ACTUAL CONSTRUCTION WILL BEGIN IN OCTOBER.

MR. CHAIRMAN, THE DISTRICT ENGINEER PREDICTS THAT ALL WORK CAN BE COMPLETED BY THE FALL OF 1991, AND THE HURRICANE PROTECTION PROJECT CAN BE FINISHED IN

ITS ENTIRETY, IF AN APPROPRIATION OF $26 MILLION IS APPROVED FOR THE COMING FISCAL YEAR.

THE ADMINISTRATION'S REQUEST PROPOSES TO DEFER $12 MILLION OF THAT FUNDING, AND RECOMMENDS AN APPROPRIATION OF $14 MILLION.

MR. CHAIRMAN, AS LONG AS THAT PROJECT IS UNDER CONSTRUCTION, IT IS LIKE A HOUSE THAT IS ONLY HALF-FINISHED. ONCE COMPLETED, IT CAN SHELTER A FAMILY AGAINST THE RAVAGES OF THE MOST DESTRUCTIVE STORM. BUT SO LONG AS IT IS "UNDER CONSTRUCTION" IT CAN BE RUINED BY EVEN LIGHTER WINDS AND MILDER STORMS.

TO DEFER THIS PROJECT --TO DRAG IT ON FOR ANOTHER TWO OR THREE FISCAL YEARS-- ENSURES THAT IT WILL GROW MORE EXPENSIVE TO FINISH. IT PROLONGS THE CITY'S EXPOSURE AND VULNERABILITY. IT INCREASES THE RISK THAT A MAJOR STORM WILL WRECK THE PROGRESS THAT HAS ALREADY BEEN MADE AND RAISES THE POTENTIAL

FOR CATASTROPHIC LOSS OF LIFE AND PROPERTY.

I AM THEREFORE REQUESTING THAT THE SUBCOMMITTEE APPROVE A REQUEST FOR $26 MILLION, AS RECOMMENDED BY THE DISTRICT ENGINEER, SO THAT THIS PROJECT CAN BE COMPLETED ON SCHEDULE. SUCH A MOVE WILL REDUCE THE PROJECT'S FINAL COSTS, PROTECT THE CITY NOW RATHER THAN LATER, AND POSSIBLY AVERT THE VERY DISASTER WE ARE SEEKING TO PREVENT.

IN CLOSING, MR. CHAIRMAN, LET ME ONCE AGAIN THANK YOU AND YOUR SUBCOMMITTEE FOR THEIR ATTENTION, CONSIDERATION AND SUPPORT OF THIS PROJECT. IT MEANS MUCH TO THE TAXPAYERS OF THE STATE OF MARYLAND, WHO HAVE ALREADY INVESTED MORE THAN $11 MILLION TO PREPARE THE CONSTRUCTION SITE FOR COMPLETION AND WHO WILL SHARE IN ALL FUTURE COSTS OF THE PROJECT.

YOUR SUPPORT HAS MEANT A GREAT DEAL TO THE PEOPLE OF OCEAN CITY AND TO ITS SUMMERTIME VISITORS, AND IT HAS MEANT A GREAT DEAL TO ME PERSONALLY.

I WILL BE SUPPLYING THE SUBCOMMITTEE WITH A DETAILED SPREADSHEET DESCRIBING THE SCHEDULE OF CONTRACTS AND CONSTRUCTION THAT WILL BRING THIS PROJECT TO COMPLETION IN A TIMELY FASHION. I RESPECTFULLY URGE YOU TO APPROVE THIS REQUEST FOR SUFFICIENT FUNDING TO CLOSE THIS PROJECT OUT, AND I WILL BE HAPPY TO RESPOND FOR THE RECORD TO ANY QUESTIONS YOU, THE SUBCOMMITTEE MEMBERS OR STAFF MAY HAVE REGARDING THE PROJECT.

* * *

THURSDAY, MARCH 29, 1990.

CENTRAL UTAH PROJECT

WITNESSES

HON. WAYNE OWENS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF UTAH

DON CHRISTIANSEN, GENERAL MANAGER, CENTRAL UTAH WATER CONSERVANCY DISTRICT

ROSCOE GARRETT, CHAIRMAN OF THE BOARD, CENTRAL UTAH WATER CONSERVANCY DISTRICT

RON McKEE, BOARD OF DIRECTORS, CENTRAL UTAH WATER CONSERVANCY DISTRICT

DAVE WILSON, BOARD OF DIRECTORS, CENTRAL UTAH WATER CONSERVANCY DISTRICT

BOYD WORKMAN, BOARD OF DIRECTORS, CENTRAL UTAH WATER CONSERVANCY DISTRICT

BETTY PETERSON, CENTRAL UTAH WATER CONSERVANCY DISTRICT

Mr. BEVILL. Next we have Mr. Don Christiansen and our friend and colleague, Congressman Wayne Owens.

Mr. OWENS. If I may introduce this group with me, to my immediate left is Don Christiansen, General Manager of the Central Utah Project which both you, Mr. Chairman, and Mr. Myers have invested so much time in the past, and Roscoe Garrett who is chairman of the Central Utah Water Conservancy Board. He is a great man. This is a great project. $1.5 billion of federal funds have been invested thus far. We are in the middle of a reauthorization, as you gentlemen know, for this year.

This year the request is, we think, quite modest, but it moves the project along. It is important to note that most of the work necessary to mitigate for the environmental impacts of the project thus far is still yet to be done.

This year's appropriation request and those over the remaining years will be critical if we are to achieve the balance between environmental quality and water development that we have promised to the people of Utah.

I want to express my appreciation for your continued assistance. Don.

Mr. CHRISTIANSEN. Thank you. As has been indicated, I am Don Christiansen, General Manager. The Chairman of the Board is here. We have also Ron McKee, Dave Wilson, and Boyd Workman, all three of the Board of Directors. We have one other member of our staff, Betty Peterson, with us. It is our pleasure to be here to support the budget. We ask your support in that budget for the Central Utah Project. We want to thank you Members of the committee for the continued support that you have given us over the years.

We recognize that we would not be as far along as we are today without your continued support and endurance.

We also want to thank our congressional delegation here publicly while we are here and for the support they have given us. All of them have worked hard to get this project completed.

We are on the home stretch, I believe. We request your further indulgence to get us through this. We will not read the whole written testimony, but ask that it be entered into the record and thank you for the opportunity.

Mr. BEVILL. The entire testimony will be made a part of the record.

Mr. CHRISTIANSEN. Thank you. I appreciate that. We appreciate being here. Thank you for the opportunity to testify. We appreciate your time and efforts.

Mr. BEVILL. We will certainly work with you, Wayne, and your delegation and hope that we can accommodate you.

Mr. OWENS. The total Utah delegation is 100 percent united on this project. Mr. Nielson and Mr. Hansen intended to be here. I know I am just a couple minutes ahead of time to help the committee move along. I am sure they will be here at the regularly scheduled time.

Mr. MYERS. I am sure we will hear from them.

Mr. OWENS. You will hear from them.

[The statement of Hon. Wayne Owens and Roscoe Garrett follow:]

STATEMENT OF WAYNE OWENS
UTAH - SECOND DISTRICT

BEFORE THE
HOUSE APPROPRIATIONS SUBCOMMITTEE
ON ENERGY AND WATER DEVELOPMENT

MARCH 29,1990

Mr. Chairman, members of the Committee, thank you for the opportunity to join with my colleagues this afternoon in introducing the members of the Central Utah Water Conservancy Board. We are all here today to testify in support of the Bureau of Reclamation budget for the Central Utah Project.

We greatly appreciate the support you and the members of the Committee have given to this project, which has been 35 years in the making. As we enter the final phases of the project, we are working closely with the Congress and with all of the citizens of Utah to ensure that the project reflects the changes that have occurred in national water policy over the intervening years.

It is important to note that most of the work necessary to mitigate for the environmental impacts of the project is yet to be done. This years' appropriation request, and those over the remaining years, will be critical if we are to achieve the balance between water development and environmental quality that we have promised to the people of Utah for so long.

Thank you again for the opportunity to appear before you with my distinguished colleagues and with our friends from the Central Utah Water Conservancy Board on behalf of all the citizens of Utah.

TESTIMONY OF ROSCOE GARRETT

CHAIRMAN OF THE BOARD

CENTRAL UTAH WATER CONSERVANCY DISTRICT

BEFORE THE

HOUSE AND SENATE APPROPRIATIONS COMMITTEES

MARCH 29, 1990

Mr. Chairman, members of the Committee, my name is Ross Garrett and I am the Chairman of the Board of the Central Utah Water Conservancy District. I am accompanied by Mr. Don Christiansen who is the District's General Manager as well as Rondal McKee, David Wilson, and Boyd Workman who are members of the CUWCD Board. In addition, Betty Peterson of our administrative staff is also with us today. It is my great pleasure to be here today to testify in support of the Bureau of Reclamation's construction budget for the Central Utah Project.

Initially, let me thank you and the other members of the Committee for the strong support which you have always given our project. While there are many hurdles which must be overcome in the future, we recognize that we would not be as far along as we are in the construction of the Central Utah Project if it were not for the strong support which you and your colleagues have given to our project in the past. In addition, I wish to publicly thank all of the members of our Utah congressional delegation for the strong support which they continue to give to our project.

The program which the Bureau of Reclamation has outlined for the Bonneville Unit of the Central Utah Project in Fiscal Year 1991 is an ambitious one. Altogether the Bureau has proposed spending nearly $82 million for ongoing construction. The Fiscal Year 1991 program involves work in three principal areas.

First, $1.6 million will be allocated to ongoing construction of the Bonneville Unit collection system. This will involve work at the Currant Creek Dam and Reservoir, operation and maintenance costs associated with the Soldier Creek Dam, the

Strawberry Reservoir enlargement and associated collection works, and construction and installation of drains in the Taylor Canal area.

In addition, the Bureau has proposed $21.4 million for work associated with the Diamond Fork Power System. This includes preconstruction activities at the Monks Hollow Dam and Reservoir, preconstruction activities for the Diamond Fork power pipeline. The bulk of these funds, however, will be spent to continue construction of Syar Tunnel. Work will also continue on the Sixth Water Aqueduct.

Most of the funds budgeted for the Central Utah Project in Fiscal Year 1991 involve the municipal and industrial water system. Nearly $57 million will be spent to continue construction of the Jordanelle Dam which is the major water supply feature of the M&I system. Construction for Stage II of the Dam will continue and work on the relocating highways 40 and 149 will continue. Preconstruction activities associated with the Jordanelle Reservoir clearing will also be continued in Fiscal Year 1991. Other work being proposed for the municipal and industrial systems involves preconstruction activities associated with the Upper Provo River improvements as well as work associated with the Indian Ford pumping plant. Finally, some minor work will also be completed on the Jordan Aqueduct system.

All of the work proposed by the Bureau of Reclamation for Fiscal Year 1991 is vitally important in keeping the construction of this project on schedule. As members of this Committee are well aware, delays in construction of projects of this magnitude can only result in higher costs. Therefore, the CUWCD Board is strongly supportive of the Bureau of Reclamation's ambitious plans in Fiscal Year 1991. We are looking forward to the reauthorization of the irrigation and drainage features of the project and anticipate seeking additional funding for that in Fiscal Year 1992.

Again, Mr. Chairman, thank you for your strong support for our project and for allowing me the opportunity to testify before you today.

THURSDAY, MARCH 29, 1990.

COLORADO PROJECTS

WITNESS

HON. BEN NIGHTHORSE CAMPBELL, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF COLORADO

Mr. **BEVILL**. We are pleased to hear from our good friend and colleague Congressman Campbell.

Mr. **CAMPBELL**. Thank you, Mr. Chairman. I appreciate the time and bring you greetings from all your friends in the Third Congressional District, who you both have been out to see a few times.

I am happy to say that we are not going to ask you, as we usually do, to do battle with the Administration budget. This year, for the first time, the Administration has provided adequate funding for all of our projects in the Third Congressional District. I am delighted, as all our people in the district are delighted. We want to thank you for that support. Is there anything I can tell you about Colorado?

Mr. **BEVILL**. You made the best presentation today. It is a pleasure to work with you.

Mr. **CAMPBELL**. Thank you.

[The statement of Hon. Ben Nighthorse Campbell follows:]

STATEMENT IN SUPPORT OF APPROPRIATIONS
BEFORE THE
HOUSE APPROPRIATIONS SUBCOMMITTEE
ON WATER AND POWER DEVELOPMENT
MARCH 29, 1990

Chairman Bevill, it's a pleasure to appear before you today because I'm feeling a sense of relief rather than pressure. As you know, water projects are crucial in our part of the country and you've help build more than a few of them.

For the past several years, my constituents and I have been asking for additional money above what the Administration has requested. This year, however, the Administration has provided adequate funding for all the projects in the Third Congressional District.

For instance, the Animas-La Plata Project, the foundation of the 1986 Ute Indian Water Rights Settlement, needed $13.4 million in fiscal year 1991 in order to meet the twelve-year construction timetable. The Administration has finally recognized the importance of this project and has recommended the necessary funding.

Another important aspect of the settlement is the Indian water contained in the existing Lake Capote, located on the Southern Ute Indian Reservation. The Administration is recommending that all of the Interior Department's Safety of Dams projects be transferred to the Bureau of Reclamation. The Bureau of Indian Affairs, was going to rehabilitate Lake Capote enabling it to hold approximately 4000 acre feet of water for the Tribe, nearly doubling the amount of water in the Lake. The cost of this rehabilitation plan is $300,000.

The other Bureau of Reclamation Projects which have received the necessary funds are the Dolores, Closed Basin and Frying-Pan Arkansas projects.

I am also pleased with the Administration's request for construction money to continue work on the salinity control projects in the Colorado River basin including the Lower Gunnison Salinity Control Unit, which the Subcommittee funded for the first time last year. These projects have the support and participation of state and local water users. The funding in the President's budget should allow those to be completed on schedule.

A new Bureau of Reclamation Project that deserves special recognition is the Leadville Mine Drainage Treatment Plant. The Administration has recommended that $3.36 million be spent next year to construct this project which was authorized by the Interior Committee this year.

The old Leadville Mine Tunnel has been pouring heavy metals into the Arkansas River for nearly a hundred years, killing fish and contaminating the water that supplies the largest city in my district, Pueblo, Colorado. It is the first time the Bureau has been involved in a water quality project of this magnitude and importance.

I also strongly recommend that the Bureau be directed to continue the water quality research in the Upper Arkansas Valley, which lead to the authorization of this treatment plant.

In respect to the Army Corps of Engineers Flood Control Projects, I especially support the request to continue the pre-construction engineering and design work on the proposed flood control project in Alamosa, Colorado.

Finally, I want to bring to your attention a request supported by the entire Colorado delegation for a $4.5 million appropriation for a new research facility to house the Solar Energy Research Institute located in Golden, Colorado. The delegation wrote to you on March 22, 1990, explaining the facility's importance and I know you will consider our request carefully.

Thank you for past, present and future support. It is a pleasure to work with you.

SUMMARY OF APPROPRIATIONS REQUESTS

BUREAU OF RECLAMATION CONSTRUCTION	
Animas-La Plata	$13.4 million
Closed Basin Project	$6.8 million
Dolores Project	$50.4 million
Frying-Pan Arkansas Project	$1.5 million
Leadville Mine Drainage Tunnel	$3.36 million
Lower Gunnison, Paradox and Grand Valley Salinity Control Projects	$37.13 million
Safety of Dams-Lake Capote	$300,000
ARMY CORPS OF ENGINEERS	
Alamosa Flood Control Project Pre-construction	$240,000
DEPARTMENT OF ENERGY	
Solar Energy Research Facility	$4.5 million

THURSDAY, MARCH 29, 1990.

CENTRAL UTAH PROJECT

WITNESSES

HON. HOWARD C. NIELSON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF UTAH

HON. JAMES V. HANSEN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF UTAH

Mr. BEVILL. Next, we have our colleague, Congressman Howard Nielson. You may proceed as you wish.

Mr. NIELSON. Thank you, Mr. Chairman.

I appreciate, Mr. Chairman and Mr. Myers, the chance to testify before you in support of the CUP Project in Utah, the 1991 proposed appropriations for the Central Utah Project.

This project is of great importance to the growth and development of my district and the State of Utah. Our entire congressional delegation is for it. We feel we can continue the progress we planned. We plan to finish the project by 1995, as you know.

If we continue to get the appropriations in the next few years, we will continue it without the delays that caused the inflation increases over the past. This will enhance Mr. Hansen's district but most of it is in my district.

I think it is very important that we finish the Jordanelle Dam, very important that we finish the industrial part of that project. As you know we are putting a bill in to change the method by which we handle the irrigation and drainage part and we are going to do that this year and separately we will be back to you next year on that.

We are the second driest state in the country. We do need the water. The Colorado River Compact allows the four states to share the water. This is Utah's attempt to utilize that where it is needed in the metropolitan areas.

If Brigham Young had stopped at the boundary to Utah, there would be no problem, but we went on to Salt Lake where the population is and the water is not.

This is necessary to bring that water to that area. We know funds are limited but we appreciate your support.

Mr. BEVILL. Yes. All right.

Our friend, and colleague, Jim Hansen, we will be glad to hear from you.

Mr. HANSEN. Thank you, Mr. Chairman.

Mr. Myers, I appreciate being with you today. I imagine Howard has covered everything that was supposed to be covered on this.

Mr. MYERS. I spent all day yesterday meeting with you two.

We have to stop meeting with you like this. People will talk.

Mr. HANSEN. Let's hope these meetings don't continue.

Let me just say this, if I may: It was first authorized in 1956. Since that time, we have put a man on the moon, the Berlin Wall has come up and down, we have conquered polio, we have done all of the things, and now the CUP project is still there.

I have often said the closest thing to eternal life I have ever found in my life is the Central Utah Project. We all talk about eternal life, and this one has about achieved it.

But this is important to us as the Central Arizona Project is to our friends from Arizona. We are really a dry state.

When the pioneers first got out there, the first thing they realized, if we don't have reservoirs, if we cannot impound this water, we are not going to make it.

We are not like you folks when the Lord blesses you by water falling out of the skies, taking care of your feeds and helping you out. We don't save it. We don't have it.

And the old axiom out there is, you can mess with anything, our wives, our jobs, don't mess with the water.

Mr. MYERS. Never cared for water anyway.

Mr. HANSEN. Strike that one, will you?

I got a little carried away there.

Mr. MYERS. You are on the Ethics Committee, too. I am kind of shocked.

Mr. HANSEN. I had a first cousin shot over water down in Ephraim where my mother is from. You take somebody's water, you got a 30/30 coming at you.

We go over on the seas side and get it across those mountains and get it in. It will be the greatest thing we can do. And I appreciate what you folks have done.

I would love to see in my lifetime the Central Utah Project finished. I would almost be ready to check out if I could do that. I understand you are half under water now; is that right, Mr. Chairman?

Mr. BEVILL. We have got floods down there.

Mr. HANSEN. Send it out our way.

Mr. BEVILL. We had two cities under water.

Mr. NIELSON. We had a lot of floods in 1983, but we have been dry ever since.

Mr. BEVILL. We are glad to hear from you, and we will certainly work with you as we have in the past.

Mr. NIELSON. I will put my entire statement in the record.

Mr. BEVILL. Your prepared statements will be part of the record.

[The statements of Hon. Howard C. Nielson and Hon. James V. Hansen follow:]

Statement of the

HONORABLE HOWARD C. NIELSON

before the Appropriations Subcommittee on
Energy and Water Development

March 29, 1990

MR. CHAIRMAN, MEMBERS OF THE COMMITTEE, I APPRECIATE THE OPPORTUNITY TO TESTIFY BEFORE YOU IN SUPPORT OF THE FISCAL YEAR 1991 PROPOSED APPROPRIATIONS FOR THE CENTRAL UTAH PROJECT. THIS PROJECT IS OF GREAT IMPORTANCE TO THE GROWTH AND DEVELOPMENT OF MY DISTRICT AND THE STATE OF UTAH.

I HAVE COME BEFORE THIS COMMITTEE OVER THE YEARS AND EXPLAINED THE PROJECT AND THE IMPACT IT WILL HAVE ON OUR STATE. I WON'T REPEAT ALL THAT FOR YOU AT THIS TIME. I WOULD JUST EMPHASIZE THAT THE AMOUNTS PROPOSED THIS YEAR WILL ALLOW CONSTRUCTION TO CONTINUE ON THE BONNEVILLE UNIT OF THE CENTRAL UTAH PROJECT ACCORDING TO SCHEDULE.

WE IN UTAH ARE AWARE THAT FUNDS ARE LIMITED AND IN GREAT DEMAND. HOWEVER, IT MAKES SENSE TO US THAT PROVIDING ENOUGH FUNDS TO KEEP A PROJECT ON SCHEDULE IS MORE COST EFFECTIVE. DELAYING THE PROJECT HAS ALREADY INCREASED THE COSTS CONSIDERABLY DUE TO INFLATION.

MR. CHAIRMAN, THE CONTINUED SUPPORT OF YOU AND YOUR COMMITTEE HAS BEEN GREATLY APPRECIATED BY MYSELF AND THOSE

CONCERNED WITH THE CENTRAL UTAH PROJECT. I HOPE THAT THIS SUPPORT WILL CONTINUE AS WE ALL WORK TO COMPLETE THE PROJECT AS QUICKLY AND COST EFFECTIVELY AS POSSIBLE. I LOOK FORWARD TO WORKING WITH YOU AGAIN THIS YEAR. THANK YOU.

STATEMENT OF CONGRESSMAN JAMES V. HANSEN
BEFORE THE
SUBCOMMITTEE ON ENERGY AND WATER
COMMITTEE ON APPROPRIATIONS
MARCH 29, 1990

Mr. Chairman, I appreciate being able to make a statement before the Subcommittee today.

Let me be very brief. The Central Utah Water Project was first authorized in 1956. It is one of the largest and most complex projects ever undertaken by the Bureau of Reclamation. We are close to putting together a final legislative package which will finish authorizing the major components of the project, and, at the same time, complete environmental mitigation in Utah.

Today, I am here to express my support for the Bureau of Reclamation's request for approximately 100 million dollars for the fiscal year 1991 budget.

I appreciate your longstanding support of the project and for your interest in many of the unique issues in the West.

This concludes my statement. Thank you for this time.

Mr. **Bevill**. A statement from the Upper Colorado River Commission will also be inserted in the record at this point.

[The information follows:]

UPPER COLORADO RIVER COMMISSION

355 South Fourth East Street
Salt Lake City, Utah 84111

March 30, 1990

Hon. Tom Bevill
Chairman
Subcommittee on Energy and Water Development
Committee on Appropriations
House of Representatives
2362 Rayburn House Office Building
Washington, D. C. 20515

Dear Chairman Bevill:

Enclosed for the written record of the Hearings before the House Subcommittee on Energy and Water Development of the Committee on Appropriations is a copy of the Upper Colorado River Commission's statement supporting the appropriation of funds for the Colorado River Storage Project and participating projects.

I appreciate the opportunity to submit the Commission's statement for the Subcommittee's consideration and the Record.

Very truly yours,

Gerald R. Zimmerman

Gerald R. Zimmerman
Executive Director

GRZ:hiw

Enclosure

STATEMENT OF GERALD R. ZIMMERMAN, EXECUTIVE DIRECTOR
UPPER COLORADO RIVER COMMISSION
before the
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
of the
COMMITTEE ON APPROPRIATIONS
HOUSE OF REPRESENTATIVES

March 29, 1990

Summary of Specific Action Requested

Appropriation of funds recommended by representatives of the States of Colorado, New Mexico, Utah, and Wyoming for the Colorado River Storage Project and participating projects.

The Upper Colorado River Commission is an interstate compact administrative agency created by the Upper Colorado River Basin Compact of 1948. The member States of the Upper Colorado River Commission are: Colorado, New Mexico, Utah, and Wyoming. Since its inception, the Commission has actively participated in the development, utilization, and conservation of the water resources of the Colorado River Basin.

The member States of the Upper Colorado River Commission have always given strong support to water resources development in the Upper Colorado River Basin and in particular to the Colorado River Storage Project and participating projects. We appreciate the opportunity to provide testimony before this subcommittee in support of the appropriation of funds to continue the construction and operation of the Colorado River Storage Project and participating projects in Fiscal Year 1991.

Commission's member States will also submit testimony to this subcommittee in support of appropriations with respect to the development of the water resource projects and programs in their States as well as the entire Upper Colorado River Basin, and the States' testimony is fully supported by the Commission. You will note that the States' requested funding for the Fiscal Year 1991 ongoing program for the Colorado River Storage Project and participating projects is that proposed in the President's Budget for the Bureau of Reclamation.

Specifically, the Upper Colorado River Commission supports an appropriation of $144.238 million for the Bureau of Reclamation's regular construction program. Of that amount, $13.415 million is for the Animas-La Plata Project in Colorado and New Mexico, $81.773 million is for the Bonneville Unit of the Central Utah Project in Utah, and $49.050 million is for the Dolores Project in Colorado. The funding levels supported by the Upper Colorado River Commission are the same as the amounts contained in the President's budget and are as follows:

Project	President's FY 1991 Budget (Thousand Dollars)
Animas-La Plata Project	$ 13,415
Bonneville Unit (CUP)	81,773
Dolores Project	49,050
	$144,238

Funding levels contained in the President's Fiscal Year 1991 Budget for other activities associated with the Colorado River Storage Project and participating projects are fully supported by the Commission and include:

Activity	President's FY 1991 Budget (Thousand Dollars)
CRSP, Drainage and Minor Construction:	
Central Utah Project:	
Jensen Unit	$ 30
Dallas Creek Project	745
Total	$ 775
CRSP, Preconstruction Activity:	
Central Utah Project:	
Uintah Unit	$ 50
Total	$ 50
CRSP, Section 8:	
Central Utah Project:	
Bonneville Unit	$16,988
Dolores Project	1,366
Dallas Creek Project	5,110
Wayne N. Aspinall Unit	572
Seedskadee National Wildlife Refuge	2,932
Total	$26,968

In addition, the Upper Colorado River Commission supports the Bureau of Reclamation's funding request for Fiscal Year 1991 for development and implementation of the Colorado River Salinity Control Program described in Public Law 93-320, as amended.

The Colorado River Salinity Control Program, which authorizes both Title I and Title II projects, is designed to maintain salinity levels in the Colorado River system within established numeric criteria while the Basin States continue to develop their Compact-apportioned waters. This program is endorsed by the seven Colorado River Basin States and the Federal Government and is essential to the overall development and management of the Colorado River Basin. Specifically, the Commission supports an appropriation of $14.295 million for the Bureau of Reclamation's Title I Colorado River Basin salinity control program and $24.228 million for the Title II program. The funding levels supported by the Upper Colorado River Commission are the same as the amounts contained in the President's Budget and are as follows:

	President's FY 1991 Budget (Thousand Dollars)		
TOTAL Title I Program			$14,295
Title II Plan Formulation		$ 935	
Title II Construction			
(a) Grand Valley	14,732		
(b) Paradox Valley	3,380		
(c) Lower Gunnison Winter Water	4,726		
Subtotal		$22,838	
Title II Operation and Maintenance			
(a) Grand Valley	295		
(b) Paradox Valley	160		
Subtotal		$ 455	
TOTAL Title II Program Funding			$24,228
TOTAL Title I and Title II Program			$38,523

Further detailed statements regarding the specific funding for the salinity program will be presented in the testimony of the Executive Director of the Colorado River Basin Salinity Control Forum as well as by representatives of the Colorado River Basin States.

On behalf of the Upper Colorado River Commission, I thank you for providing the Commission an opportunity to present this statement for the Subcommittee's consideration.

THURSDAY, MARCH 29, 1990.

APPALACHIAN REGIONAL COMMISSION

WITNESS

HON. GUS SAVAGE, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ILLINOIS

Mr. BEVILL. Come right in, Congressman Savage.

We are pleased to have you with us. We appreciate the great job you do with the Appalachian Regional Commission. And you did your part in the last Congress, but the Senate didn't take care of it, so you had to come back, didn't you?

They didn't put the authorization through.

Mr. SAVAGE. May I say, Mr. Chairman, you did your part even better; and, of course, we are going to need your help again, because as Chairman of the Subcommittee on Economic Development, I am here to urgently request that, for fiscal year 1991, the programs of the Appalachian Regional Commission be funded at $185 million, in line with the authorization bill overwhelmingly adopted by the House in 1987 and H.R. 2015, a similar bill reported from the Public Works and Transportation Committee in December 1989.

The President's proposed budget for ARC for next year leaves me with mixed feelings. On the one hand, it is good to see an amount requested for the Commission for the first time, except for highways, since the 1982 budget.

On the other hand, it is disgraceful that it is a mere $50 million, an amount that would let the Commission bleed to death. It is disgraceful because many industrial, geographical and population segments within that region have suffered much and worked hard, yet still lag far behind the rest of America.

The President seems to feel that economic development is strictly a local matter. Let me make it clear, I am not completely in opposition of that, because certainly, experience does show that development projects are most successful when initiated by local participants who have the vision and willingness to assume a maximum responsibility for both financing and decision making.

However, the causes of economic disadvantages or imbalances that affect many areas are often due to geography or are national or even worldwide in scope.

Remedying them provides national benefits and requires national involvement.

For example, Appalachia's highway program is dramatically changing the region's geographical isolation permitting new industrial and job opportunities.

Moreover, many of the economic problems of the region are related to the decline of the steel, coal and other durable goods industries which have faced heavy foreign competition.

Progress is being made in Appalachia precisely because the work of ARC is bearing fruit. Testimony has revealed that, as of early 1989, about 24 percent of that region's 397 counties had unemployment rates at or below the national average, a better claim than could have been made 25 years ago when ARC began its work.

However, the job in no way finished and that region remains among our Nation's more economically distressed areas.

The Administration claims that the goals of economic development programs (and I quote) "* * * can be better met at the Federal level through the Administration's national policies of fostering economic expansion and job creation; and, in the case of highly distressed areas, through incentives such as those in the Administration's Enterprise Zone proposal."

However, if that is so, why is it that the economic expansion of recent years and Administration policies aimed at addressing economic problems at the national level bypassed so many of the Nation's distressed sectors, including large parts of Appalachia?

Moreover, can the Administration's proposed enterprise zones adequately replace ARC's meaningful transportation systems and infrastructure incentives and other development initiatives to assist severely distressed and underdeveloped counties in the region overcome persistent economic disparities and, generally, to raise the quality of life for Appalachia residents? The experiences of the state and local governments answer a resounding, No.

For nine years, Congress has appropriated funds to keep ARC programs alive because targeting Federal resources to Appalachia has been a cost-effective way to help cure some of the ills and imbalances in the region's economy and fiscal capacity.

I praise this committee's leadership in that effort and its awareness that the Nation as a whole is being well served by this Federal investment.

In this decade, our country is facing a host of new problems and challenges from changing national and global economies. If we, as a people, are to remain competitive, we must fully exploit the productive potential of all regions, population segments and industries of our Nation.

To do that we must maintain our strengths and keep working to surmount our weaknesses. We must recognize that while the national unemployment rate has been 5.3 percent for several months now, the rate in many parts of Appalachia is in the double-digits and for African Americans is about 11 percent and for Hispanic Americans is about 8 percent.

Furthermore, we must overcome the fact that we are now a debtor not a creditor Nation, and that our productivity growth rate lags behind other industrialized nations, having dropped from an average rate of 3.3 percent for the years following World War II to an average of only 0.9 percent last year.

Moreover, we must not be lulled by recent data showing that our trade deficit is the lowest since 1984, because it is still high, totaling over $100 billion for six straight years.

These are all ingredients in our ability to compete internationally and are critical factors in whether our businesses can pay higher wages for greater output, which is what produces a higher standard of living for our citizens.

Finally, H.R. 2015, the bill that the Public Works Committee reported out unanimously last December, is expected to be on the House Floor soon. We anticipate action by the Senate this year which, hopefully, will result in enactment of a law providing for a three-year re-authorization for ARC at $185 million annually.

I am very hopeful that you can see your way clear to providing full funding for ARC in this Appropriation legislation, and I thank you for your time and consideration.

[The statement of Hon. Gus Savage follows:]

STATEMENT OF THE HONORABLE GUS SAVAGE, CHAIRMAN
SUBCOMMITTEE ON ECONOMIC DEVELOPMENT
COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION

BEFORE THE SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
COMMITTEE ON APPROPRIATIONS
MARCH 29, 1990

Mr. Chairman, Members of the Committee, as Chairman of the Subcommittee on Economic Development, I urgently request that, for fiscal year 1991, the programs of the Appalachian Regional Commission be funded at $185 million, in line with the authorization bill overwhelmingly adopted by the House in 1987 and H.R. 2015, a similar bill reported from the Public Works and Transportation Committee in December 1989.

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The President seems to feel that economic development is strictly a local matter. Certainly, experience does show that development projects are most successful when initiated by local participants who have the vision and willingness to assume a maximum responsibility for both financing and decisionmaking. However, the causes of economic disadvantages or imbalances that affect many areas are often due to geography or are national or even worldwide in scope. Remedying them provides national benefits and requires national involvement. For example, Appalachia's highway program is dramatically changing the Region's geographical isolation permitting new industrial and job opportunities. Moreover, many of the economic problems of the Region are related to the decline of the steel, coal and other durable goods industries which have faced heavy foreign competition.

Progress is being made in Appalachia precisely because the work of ARC is bearing fruit. Testimony has revealed that, as of early 1989, about 24% of that region's 397 counties had unemployment rates at or below the national average---a better claim than could have been made 25 years ago when ARC began its work. However, the job is not finished and that region remains among our Nation's more economically distressed areas.

The Administration claims that the goals of economic development programs (and I quote) "...can be better met at the Federal level through the Administration's national policies of fostering economic expansion and job creation; and, in the case of highly distressed areas, through incentives such as those in the Administration's Enterprise Zone proposal." However, if that is so, why is it that the economic expansion of recent years and Administration policies aimed at addressing economic problems at the national level bypassed so many of the Nation's distressed sectors, including large parts of Appalachia? Moreover, can the Administration's proposed enterprise zones adequately replace ARC's meaningful transportation systems and infrastructure incentives and other development initiatives to assist severely distressed and underdeveloped counties in the Region overcome persistent economic disparities and, generally, to raise the quality of life for Appalachia residents? The experiences of the State and local governments answer a resounding, NO!

For nine years, Congress has appropriated funds to keep ARC programs alive because targeting Federal resources to Appalachia has been a cost-effective way to help cure some of the ills and imbalances in the Region's economy and fiscal capacity. I praise this Committee's leadership in that effort and its awareness that the Nation as a whole is being well served by this Federal investment.

In this decade, our country is facing a host of new problems and challenges from changing national and global economies. If we, as a people, are to remain competitive, we must fully exploit the productive potential of all regions, population segments and industries of our Nation.

To do that we must maintain our strengths and keep working to surmount our weaknesses. We must recognize that while the national unemployment rate has been 5.3% for several months now, the rate in many parts of Appalachia is in the double-digits, and for African Americans is about 11 percent and for Hispanic Americans is about 8 percent.

Furthermore, we must overcome the fact that we are now a debtoBr not a creditor Nation, and that our productivity growth rate lags behind other industrialized nations, having dropped from an average rate of 3.3% for the years following World War II to an average of only 0.9% last year. Moreover, we must not be lulled by recent data showing that our trade deficit is the lowest since 1984, because it is still high, totaling over $100 billion for six straight years.

These are all ingredients in our ability to compete internationally and are critical factors in whether our businesses can pay higher wages for greater output---which is what produces a higher standard of living for our citizens.

Finally, H.R. 2015, the bill that the Public Works Committee reported out unanimously last December, is expected to be on the House floor soon. We anticipate action by the Senate this year which, hopefully, will result in enactment of a law providing for a three-year re-authorization for ARC at $185 million annually.

I am very hopeful that you can see your way clear to providing full funding for ARC in this Appropriation legislation, and I thank you for your time and consideration.

Mr. **Bevill**. Well, Mr. Chairman, we appreciate the good job you have done on this. This panel shares your feelings; it is a very important program.

And certainly in 1965, when Congress set this program up, it was for the purpose of helping those people in the Appalachian area, who are unable to help themselves and to give them an equal opportunity.

That is the way, as you know, the authorization reads. So we are hoping that this time the other body will follow your leadership and get the authorization through, and I think that you have described the need for funds very accurately.

We were happy to see anything put in the President's budget, but it's a little pitiful, isn't it?

Mr. **Savage**. I think so.

Mr. **Bevill**. Thank you very much.

Mr. **Savage**. Thank you.

Mr. **Myers**. I would like to say if you don't want it, we will take it in Indiana.

Mr. **Savage**. Incidentally, I was up—we held a hearing in Indiana, Pennsylvania, oh, I think last month.

Mr. **Myers**. Is that where Indiana's money has been going, Indiana, Pennsylvania?

Mr. **Savage**. I'll tell you, there was nothing in it. The check was a blank check, no signature.

Mr. **Myers**. We don't even get that.

Mr. **Savage**. Thank you again.

Mr. **Myers**. We get an honorable mention once in a while.

Thank you.

Mr. **Bevill**. The committee stands adjourned now until 9:30 a.m. next Tuesday.

We have several other statements which were submitted. We will add them into the record at this point.

[The information follows:]

Statement

of

Lynn Kopfman
President
Rio Grande Water Conservation District

On Behalf of the
Closed Basin Division
San Luis Valley Project, Colorado

to the

Appropriations Subcommittee on
Energy and Water Development

U.S. House of Representatives

March 26, 1990

Mr. Chairman and distinguished members of the Committee, this testimony is submitted on behalf of the Board of Directors of the Rio Grande Water Conservation District.

I. Introduction.

The Rio Grande Water Conservation District is a political subdivision of the State of Colorado established pursuant to the provisions of Colorado Revised Statutes, §§37-48-101, et seq. The District is charged with the conservation, use, and development of the water resources of the Rio Grande and its tributaries within Colorado and, as such, is the local sponsoring entity of the Closed Basin Division of the San Luis Valley Project, Colorado (commonly called the "Closed Basin Project"). The District's Board of Directors represents the five counties in Colorado which will be benefited by the Project. These five counties encompass the vast majority of the land in the Rio Grande drainage basin within Colorado.

The San Luis Valley receives less than ten (10) inches of average annual precipitation and relies, almost exclusively, on irrigation to support its agricultural economy. Of the approximately 600,000 acres of irrigated land, about 425,000 acres are cultivated, with half the acreage being used to raise barley (primarily for malting) and potatoes, and the remainder being used to raise hay and alfalfa, other small grains, and vegetables. In addition to natural shortages, the single most important limitation on the availability of water for irrigation is the restrictive effect of the Rio Grande Compact. The Closed Basin Project will help to alleviate that restriction by adding water to the system. It is a true water salvage project which will permit the continued cultivation and use of the existing farmland but will not provide water supplies for new farmland. All of the irrigation systems in the San Luis Valley were developed by local water user organizations prior to the initiation of the Closed Basin Project.

II. Description of the Project.

A. Physical Circumstances. The San Luis Valley is located in south-central Colorado. The Rio Grande rises in the San Juan Mountains to the west of the Valley, flows southeasterly through the Valley to Alamosa, then runs south into New Mexico. After flowing south through New Mexico, the Rio Grande becomes the border between Texas and Mexico until it reaches the Gulf of Mexico. The Closed Basin is a hydrologic feature north of the Rio Grande in the San Luis Valley. It is created by a hydraulic divide that prevents water flowing out of the mountains on the north end of the Valley from reaching the Rio Grande. Water within the basin flows toward a sump area in the northeastern portion of the Valley, where most of the water is lost to non-beneficial evapotranspiration. The alluvial material in the sump area is believed to be separated from the lower portions of the Valley fill material by an aquiclude called the Blue Clay Series, which lies about 100 feet below the surface. The water below the Blue Clay Series is generally under artesian pressure while the water above the Blue Clay Series, in the sump, is not.

B. History of the Project. The potential for a project to salvage water in the sump area of the Closed Basin has been recognized for well over 50 years. In fact, that possibility was expressly recognized in the Rio Grande Compact (53 Stat. 785).

On October 20, 1972, Public Law 92-514 was enacted which authorized the construction, operation, and maintenance of the Closed Basin Project. The primary purpose of the Project is to salvage water which is now being lost through non-beneficial evapotranspiration. Salvage is accomplished through a series of wells which are pumped to lower the water table in the sump area of the Closed Basin. The wells only withdraw water from the shallow aquifer above the Blue Clay Series and north of the hydraulic divide. The pumped water is discharged into a conveyance channel which carries it across the hydraulic divide and delivers it to the mainstem of the Rio Grande where it is used to assist Colorado in making the deliveries required of it under the terms of the Rio Grande Compact and to permit other beneficial uses of the water.

The authorizing legislation for the Closed Basin Project has been amended on three occasions. The most recent amendment, in 1988, increased the ceiling for the Project, provided for cost-sharing by the State of Colorado, and made other modifications to the Project's original authorization.

The Project was envisioned as a solution to several water resource problems in the Rio Grande Basin. First, the Rio Grande Basin is notoriously water short in all but the rarest years. Second, the Rio Grande Compact imposes strict obligations on the State of Colorado to deliver water each year to the States of New Mexico and Texas. This obligation normally results in substantial curtailments of diversions by Colorado water users in order to meet Colorado's commitments. Third, the United States has a treaty commitment to the United States of Mexico to share the waters of the Rio Grande (34 Stat. 2953). Fourth, federal wildlife refuges in the San Luis Valley have a need for additional water. When fully constructed, the Project will assist in meeting all of these needs by providing additional water supplies not otherwise available.

At the time of Project authorization, the State of Colorado was allegedly in debt to the States of New Mexico and Texas under the terms of the Rio Grande Compact. The alleged indebtedness exceeded 900,000 acre-feet. This shortfall gave impetus to the authorization of the Project. Today, that indebtedness no longer exists due to a series of unprecedented and truly unique years in which the water supply in the Basin far exceeded all historical records; however, the elimination of that indebtedness has increased the need for and the usefulness of the Project by permitting extensive water management to occur. In addition, the hydrologic cycle has now swung to the opposite extreme with the water supply in 1990 projected to be the lowest ever recorded.

The decree for the Closed Basin Project was obtained by the Rio Grande Water Conservation District in Case No. W-3038 in a proceeding before the Water Court for Water Division No. 3, State of Colorado. The appropriation date awarded to the Project is July 31, 1963. The decree was obtained at the request of the United States, which had not been joined in State court adjudication proceedings under the McCarran Act. The decree has been dedicated to the Bureau of Reclamation for the use and benefit of the Project.

III. Applicable Statutes.

A. The Closed Basin Project authorizing legislation, P.L. 92-514 (86 Stat. 954), as amended by P.L. 96-375 (94 Stat. 1507), P.L. 98-570 (98 Stat. 2941), and P.L. 100-516 (102 Stat. 2566).

B. Rio Grande Compact (73 Stat. 785).

C. Treaty with Mexico (34 Stat. 2953).

IV. Project Status.

Construction of the Closed Basin Project has been segmented into stages (Stage 1-2, 3, 4, and 5). Stages 1-2 and 3 are completed and operating. The wells in Stages 4 and 5 are completed, the conveyance channel is completed, and all of the rights-of-way for the pipeline laterals in Stages 4 and 5 have been acquired. The construction on Stage 4 is currently ongoing with the primary power grid installed, and the contract for construction of pipeline laterals, well vaults, and pump and motor installation underway. The Bureau of Reclamation has done an excellent job in managing the Project, and water has been delivered to the Alamosa National Wildlife Refuge and the Blanca Habitat Area and to the Rio Grande from Stages 1-2 and 3. Additional funding will be used to continue the construction schedule established by the Bureau of Reclamation to ensure completion of the Project.

Pursuant to the requirements of P.L. 100-516, the General Assembly of the State of Colorado has approved Senate Bill 85, which authorizes the Colorado Water Conservation Board to expend up to six million dollars of State money in order to cost-share the construction on Stages 4 and 5. That money will be made available to the Bureau of Reclamation pursuant to a cost-sharing agreement which has been executed by both the federal government and the State of Colorado. The agreement binds Colorado to cost-share the construction activities necessary to complete the Project at the level required in the federal law.

V. Appropriation Request.

The Administration's proposed budget for FY 1991 requests the appropriation of 7.34 million dollars for ongoing construction of the Closed Basin Project. That is the amount of money that can be utilized by the Bureau of Reclamation to secure continued construction in accordance with the current schedule.

We strongly support the Administration's request. It will permit this most important project to move toward completion. It will ensure that construction activity is not interrupted, which would result in substantial additional costs and inefficiencies, and it will allow the Bureau of Reclamation to hold to its construction schedule.

VI. Conclusion.

The Closed Basin Project is vital to the long-term health of our area. It is now over two-thirds completed and the Administration's budget for FY 1991 will allow the Bureau of Reclamation to continue construction on schedule. Please include the requested sum of 7.34 million dollars in the FY 1991 budget. Thank you.

DWR:ncr
(217CB)

Census '90

Maryland Department of Natural Resources

William Donald Schaefer
Governor

Tawes State Office Building
Annapolis, Maryland 21401

Torrey C. Brown, M.D.
Secretary

John R. Griffin
Deputy Secretary

March 29, 1990

The Honorable Tom Bevill, Chairman
Subcommittee on Energy and Water Development
Committee on Appropriations
U.S. House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

In regards to the current hearings on the Fiscal Year 1991 Appropriations Act, I want to thank you for inviting me to submit a statement for the hearing record. Specifically, I want to emphasize the need for full Federal funding of the Atlantic Coast of Maryland (Ocean City) Shoreline Protection Project being constructed by the U.S. Army Corps of Engineers.

Governor Schaefer and I greatly appreciate your support for this project that is of great importance to Maryland. The $8.2 million which your subcommittee provided in the Fiscal Year 1990 Appropriations bill allowed the Corps to initiate a new construction start in the current year.

The Ocean City Project has a long history of development, and Congressional authorization was provided in the Water Resources Development Act of 1986. The authorization was based on the commitment that the State would undertake the restoration of the recreational beach component of the two-phased project while the hurricane and storm reduction component would be accomplished by the Federal Government on a cost-shared basis.

The State of Maryland, Worcester County and Town of Ocean City have met their commitment to complete the first phase of the project in September 1988. We have also made the financial arrangements necessary to meet the cost-share requirements of the Federal project. Therefore, it is essential that full Federal funding be included in the Fiscal Year 1991 Appropriations Act to allow the project to proceed towards completion on an optimum construction schedule.

I appreciate your continued support to the project and inclusion of my statement as part of the hearing record.

Sincerely yours,

Torrey C. Brown, M.D.

TCB:LML-C:sbb

Enclosure (5)

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Maryland Department of Natural Resources

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John R. Griffin
Deputy Secretary

STATEMENT BY
DR. TORREY C. BROWN, M.D.
BEFORE THE
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
COMMITTEE ON APPROPRIATIONS
MARCH 29, 1990

Mr. Chairman, Members of the Subcommittee, thank you for the opportunity to provide testimony in support of full funding of the Federal project for shoreline protection of the Atlantic Coast of Maryland at Ocean City, Maryland.

Before I proceed with my remarks on the Administration's proposed Fiscal Year 1991 budget request, I would like to express Governor William Donald Schaefer's appreciation on behalf of the citizens of Maryland for the Committee's support for this project in the Fiscal Year 1990 Appropriations Act. The $8.2 million provided by the committee last year allowed the U.S. Army Corps of Engineers to complete plans and specifications and to initiate a construction start in May 1990.

The Administration's request of $14.8 million for the Corps of Engineers budget is $11.3 million below the estimated $26.1 million projected for the Federal share in the second construction year for Fiscal Year 1991. This shortfall would prevent the Corps from completing the project on schedule and could jeopardize the progress we have already made.

The performance of the State's renourishment project, which was completed in September 1988 as part of the commitment prior to initiation of the Federal project for hurricane and storm protection, has been outstanding. Surveys conducted by the Corps' Coastal Engineering Research Center, has shown that the total volume of sand has increased, and although the shoreline has retreated to some degree, this was expected as the beach slope adjusted to its natural equilibrium profile. Accordingly, it would be most advantageous to move expediticusly to complete the Federal project on schedule and provide the protection authorized.

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We have been working very closely with the Corps of Engineers to finalize and execute the Local Cooperation Agreement with the Department of the Army. An agreement was recently reached on the acceptability of the LCA provisions and the State's Board of Public Works and Attorney General approved its execution on March 7, 1990. This approval action reaffirmed the State's commitment to finance the non-Federal share of the project costs. In addition, representatives from the Town of Ocean City and Worcester County pronounced their unequivocal support to the project at the Board of Public Works' meeting.

In fulfilling the non-Federal financial commitment for cost sharing, the State, Worcester County and Town of Ocean City have entered into a contractual agreement and developed a financial plan to insure its funds are available for the initial construction costs. In addition, a Beach Replenishment Fund was established and $4.0 million is available for operation and maintenance of the project and beach renourishment as necessary to meet the non-Federal share of costs.

The Federal share of the partnership commitment to this unique two-phased project must be now fulfilled in support of full funding of the project in Fiscal Year 1991. We have pledged and appropriated the necessary funds to meet the non-Federal share with the full expectation that construction of the Federal project would proceed at full funding as soon as the State project was completed. It is absolutely critical that the Federal Government now honor its commitment to minimize the vulnerability from storm damage and to proceed on an optimum schedule to complete the 100-year level of storm protection in Fiscal Year 1991.

I must stress that the State project does not provide the necessary storm protection that is necessary for public safety and protection of public and private property. Without the Federal project, we remain vulnerable to a potential catastrophic disaster in the event of a major storm which would place a significant financial burden of rebuilding the City and its infrastructure.

Therefore, I request the Subcommittee to provide full funding of the Federal project for Ocean City, Maryland to protect and preserve the investment that has already been made by the State of Maryland, Worcester County, the Town of Ocean City and the Federal Government.

TUESDAY, APRIL 3, 1990.

PROTON-BEAM DEMONSTRATION

WITNESSES

HON. JERRY LEWIS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

DR. DAVID HINSHAW, PRESIDENT, LOMA LINDA UNIVERSITY

Mr. BEVILL. The committee will come to order.

I see our good friend and colleague, Congressman Jerry Lewis. I know that you have to get back to your committee and your work so the Chair will recognize you. We will hear from you at this time.

Your full statement will be made a part of the record, so you may just summarize or proceed as you wish.

Mr. LEWIS. Mr. Chairman, first let me express my deep appreciation for putting us on your agenda.

You and I know what this crazy year has been like, especially this time of the morning. I express my condolences as well as my appreciation.

I am here today to introduce Dr. David Hinshaw, who is a very important constituent from my district, and in doing that, let me mention that I have a formal statement which I would choose to include in the record as well, Mr. Chairman.

This subcommittee has been very, very important in recognizing the role that Loma Linda University plays in the field of medical health in the past. Loma Linda, without question is one of the premier teaching medical universities in the country. They are on the cutting edge of technology as it relates to our concern about finding solutions to the challenge of cancer.

Loma Linda will, for the country, but also especially for the west and my district, display continuing breakthroughs in technology especially in the treatment and care of people suffering from cancer. In no small part that is because of the help of this subcommittee.

With that, let me introduce Dr. David Hinshaw, President of Loma Linda University.

[The statement of Hon. Jerry Lewis follows:]

JERRY LEWIS
35TH DISTRICT CALIFORNIA

COMMITTEES
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FOREIGN OPERATIONS
LEGISLATIVE BRANCH
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INTRODUCTORY STATEMENT
OF THE HONORABLE JERRY LEWIS
BEFORE THE HOUSE ENERGY & WATER
APPROPRIATIONS SUBCOMMITTEE
APRIL 3, 1990
2362 RAYBURN

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE: I APPRECIATE THIS OPPORTUNITY TO SPEAK WITH YOU ABOUT SOME VERY EXCITING DEVELOPMENTS WHICH ARE TAKING PLACE AT THE LOMA LINDA UNIVERSITY MEDICAL CENTER IN SOUTHERN CALIFORNIA. THE LOMA LINDA CENTER IS ONE OF THE PREMIER HIGH TECHNOLOGY CANCER TREATMENT CENTERS IN THE WORLD. YOUR SUPPORT FOR THE PROTON CANCER TREATMENT CENTER IN FY 1988 AND 1989, MADE THE CRITICAL CONTRIBUTION WHICH ENABLED THE CENTER TO BE IN THE POSITION TO BEGIN PATIENT TREATMENT THIS SUMMER.

LOMA LINDA UNIVERSITY'S MEDICAL CENTER IS THE WORLD'S FIRST PATIENT CARE FACILITY TO OFFER THE PROMISING BENEFITS OF PROTON THERAPY FOR THE TREATMENT OF CANCER. BUT THE DOCTORS IN LOMA LINDA WERE ONLY BUILDING ON THEIR NATIONAL REPUTATION. THEY ARE ALREADY RENOWNED FOR BEING THE PIONEER IN THE FIELD OF INFANT HEART TRANSPLANTATION. THE INFANT HEART TRANSPLANT PROGRAM HAS GIVEN 65 BABIES THE PRECIOUS GIFT OF LIFE--A UNIQUE GIFT, WITHOUT WHICH, EACH AND EVERY ONE OF THESE CHILDREN COULD NOT HAVE SURVIVED.

I AM HERE TODAY BECAUSE THE LOMA LINDA UNIVERSITY MEDICAL CENTER WANTS TO CONTINUE TO BUILD ON THESE PAST DISCOVERIES AND ACHIEVEMENTS. WITH ME IS DR. DAVID HINSHAW, THE PRESIDENT OF THE LOMA LINDA UNIVERSITY MEDICAL CENTER. HE WILL DESCRIBE FOR YOU AN EXCITING NEW DEVELOPMENT INVOLVING RADICLABELLED MONOCLONAL ANTIBODIES. THIS NEW PROGRAM WILL EXPAND THE CENTER'S WORK TO FIND THE BEST TREATMENTS FOR CANCER. IT WILL KEEP THIS COUNTRY ON THE LEADING EDGE OF LIFE SAVING RESEARCH, TECHNOLOGY, AND PATIENT CARE.

I KNOW FROM OUR PAST WORK TOGETHER IN THIS FIELD THAT THE COMMITTEE WILL WANT TO BE FULLY AWARE OF ALL THE DETAILS ON DR. HINSHAW'S NEW PROJECT. I AM HONORED TO HAVE THIS OPPORTUNITY TO APPEAR WITH HIM HERE TODAY.

Mr. HINSHAW. Mr. Chairman, thank you for allowing me the opportunity to testify here this morning and thank you, Congressman Lewis, for your very kind introduction.

I am Dr. David Hinshaw, President of Loma Linda University Medical Center in Loma Linda, California.

I am here today to update the subcommittee on the status of Loma Linda's Proton Cancer Treatment Center, and to describe new and very promising programs Loma Linda plans to undertake to further our work in cancer treatment and cure.

The Proton Cancer Treatment Center, I am pleased to report, is on track. We will begin treating patients this summer, starting with tumors of the eye, then tumors of the head and neck.

By fall, we should be treating tumors throughout the body. The Center, which will operate primarily as an outpatient facility, will have the capacity to treat 2,000 patients annually.

Department of Energy officials who have recently visited the facility are very much impressed with our progress and the entire proton program.

We are very excited about our progress, Mr. Chairman.

As you will recall, this Congress has supported funding for the Proton Cancer Treatment Center in fiscal year 1988 and 1989. The Center is the result of over 50 years of physics research at the large national laboratories and over 20 years of directed research at Loma Linda.

Dr. Leon Lederman, Nobel Laureate in Physics, has recently called proton therapy "the quintessential example of technology transfer from high energy physics to the service of man and his needs."

Now our new initiative at Loma Linda is designed to enhance and complement the proton therapy program. First, we wish to train medical personnel to proton therapy.

Interest in proton therapy both here and around the world has grown dramatically, Mr. Chairman.

It is anticipated that proton therapy facilities like ours will be developed at several major medical institutions across the country. In fact, the National Cancer Institute has recently set up a grant program for such a program.

Since Loma Linda will be the world's first medical institution to offer proton therapy in a hospital setting, we feel it is our duty—and privilege—to train physicists, radiobiologists, and physicians and technicians in this treatment method.

Second, we plan to enhance proton therapy with the immunology-based opportunities of substances called radiolabelled monoclonal antibodies.

The proton is directed against solid tumor masses primarily and should be curative for these. However, in some instances cancer has spread or does spread prior to the treatment of these localized masses and it is for these cells and clusters of cells that have scattered throughout the body that we are suggesting some additional work in the area of monoclonal antibody research.

Mr. BEVILL. If you will, could you wrap it up in about 30 seconds?

Mr. HINSHAW. We are adding radiolabelled monoclonal antibody techniques to this, and we would appreciate the help of the committee in developing a facility and a program to supplement the project in this arena.

We believe by combining these particular methods the public will be well-served in the treatment of cancer.

So we would like to again thank the subcommittee for its efforts in this regard and we would appreciate having this put in the record.

Mr. BEVILL. It will be made a part of the record.

[The information follows:]

TESTIMONY OF DAVID B. HINSHAW, M.D.

PRESIDENT, LOMA LINDA UNIVERSITY MEDICAL CENTER

BEFORE THE HOUSE APPROPRIATIONS SUBCOMMITTEE ON ENERGY & WATER DEVELOPMENT

APRIL 3, 1990

Mr. Chairman, thank you for allowing me the opportunity to testify before you today, and thank you, Congressman Lewis, for your very kind introduction.

I am Dr. David Hinshaw, President of Loma Linda University Medical Center in Loma Linda, California. I am here today to update the Subcommittee on the status of Loma Linda's Proton Cancer Treatment Center, and to describe new and very promising programs Loma Linda plans to undertake to further our work in cancer treatment and cure.

The Proton Cancer Treatment Center, I am pleased to report, is on track. We will begin treating patients with proton therapy this summer, starting with tumors of the eye, then tumors of the head and neck. By fall, we should be treating tumors throughout the body. The Center, which will operate primarily as an outpatient facility, will have the capacity to treat 2,000 patients annually. Department of Energy officials have recently visited the facility and are impressed with our progress and the entire proton beam program.

We are very excited about our progress, Mr. Chairman. As you recall, this Subcommittee supported funding for the Proton Cancer

Treatment Center in fiscal years 1988 and 1989. The Center is the result of over fifty years of physics research at the large national laboratories and over twenty years of directed research at Loma Linda. Dr. Leon Lederman, Nobel Laureate in Physics, has called proton therapy "the quintessential example of technology transfer from high energy physics to the service of man and his needs."

Our new initiative at Loma Linda is designed to enhance and complement the proton therapy program. First, we are initiating a training program to introduce medical personnel to proton therapy. Interest in proton therapy both here and around the world has grown dramatically, Mr. Chairman. It is anticipated that proton therapy facilities like ours at Loma Linda will be developed at several major medical institutions across the country. In fact, the National Cancer Institute recently announced a grant to encourage that development. Since Loma Linda will be the world's first medical institution to offer proton therapy in a hospital setting, we feel it is our duty -- and privilege -- to train physicists, radiobiologists, physicians and technicians in proton therapy.

Second, we plan to enhance proton therapy with the immunology-based opportunities of substances called radiolabelled monoclonal antibodies. These antibodies, developed in a laboratory and tagged with radioactive isotopes, are able to target individual cancer cells and, with proton therapy, provide the tactical support to eliminate remaining cancer cells in the body. Loma Linda has established a joint program for monoclonal antibody research with a major U.S. pharmaceutical manufacturer. Because radiolabelled monoclonal antibodies offer great promise in attacking individual cancer cells, we at Loma Linda believe that monoclonal antibody therapy -- combined with proton therapy's discrete, focused effect -- can provide highly successful treatment of cancer.

Our investigative work with monoclonal antibodies will also compliment Loma Linda's immunology, biology, and highly successful transplant program, providing strong support for organ transplantation programs and technologies at medical institutions across the country.

Third, our new program will enhance the Proton Cancer Treatment Center through further research. We plan to conduct significant charged particle radiotherapy, radiobiology, basic and clinical reserch to enhance the proton therapy program and develop new applications for the technology. Research will also include computer modeling and software development designed for radiation treatment planning systems.

Loma Linda University Medical Center is seeking your support through the Department of Energy to develop our new program of research and training. Loma Linda will match the requested Federal support, on a cost-shared basis.

Mr. Chairman, we at Loma Linda are convinced that the most effective approach to fighting cancer will be through conprehensive cancer treatment using a highly focused approach. Loma Linda doctors will combine both proton therapy to target large tumors and radiolabelled monoclonal antibodies to target individual cancer cells that have spread beyond the primary tumor site. We believe that this high-precision treatment will be a major thrust for improved cancer treatment as we approach the move into the twenty-first Century.

We would greatly appreciate the Subcommittee's continued support of our efforts to save lives and to fulfill our commitment "To Make Man Whole."

Thank you.

Mr. BEVILL. Thank you. We will certainly work with Congressman Lewis and do the best we can.

Mrs. BOGGS. Mr. Chairman, I don't want to prolong the proceedings, but I couldn't allow this opportunity to pass without expressing my personal gratitude to our witness this morning and all of the people associated with him at Loma Linda and Massachusetts General. They have been extraordinarily helpful and kind to me in the instance of my daughter's melanoma.

Thank you very much.

Mr. LEWIS. Thank you.

I would like to express my appreciation as well to Mrs. Boggs for your support in this field.

TUESDAY, APRIL 3, 1990.

SOLAR ENERGY RESEARCH INSTITUTE

WITNESS

HON. JOEL HEFLEY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF COLORADO

Mr. BEVILL. Next our good friend and colleague the Honorable Joel Hefley.

We will be glad to hear you now and your prepared statement will be made a part of the record.

You may summarize or proceed as you wish.

Mr. HEFLEY. Thank you, Mr. Chairman.

We will do that and not go over the entire text of that testimony.

I am here today to speak on behalf of the Energy Department's request for $4.5 million for further development of SERI Laboratory Building at Golden, Colorado.

I am sure this committee of all committees is very cognizant of SERI and SERI's role in this whole area of research into renewable energy.

For instance, it has developed better ways to produce ethanol, energy efficiency in buildings, to refrigerate and to treat hazardous waste.

I would invite the committee if you ever have an opportunity to come out and see it, to do so.

It amazes me every time I go through this facility. They are on the cutting edge of some of the things that are really going to answer the major environmental problems that are facing our country and the world as well as the energy problems.

They play a very important and significant cooperative role with other centers across the country. They are key to the whole solar cell research that is going on in this country. There is—it is anticipated that there will be a world market for these of over $1 billion in the foreseeable future. They are right in a key point on that.

They are integral to all alternative energy research. The existing facilities out there for laboratories, much of the laboratories, are housed in an office building.

It works, and they have been able to make it work over the years, but it is difficult and becoming more and more difficult.

Office buildings simply aren't designed to be laboratory buildings. So they have problems with the limitations that that produces.

There is a constant concern, for instance, about safety. The building wasn't structured to be a laboratory. So they go to great extents to make sure that what they do is very safe and yet this creates an inefficiency of about 25 percent, they estimate, because of having to do this. Such things as experiments where vibration is a problem and they have to calibrate for that. Many of those experiments, they simply cannot do in this facility.

The new laboratory building has been declared the most cost-efficient way to go about it. DOE studies in 1985 and 1986 have shown that the building is the preferred option to continued leasing.

Safety figures in the present building, building 16, will cost at least $600,000 over the next six years and other estimates range to as much as $1.5 million just to fix the safety things.

OMB has committed for the first time in five years to this project and the opportunity for SERI to play a key role in national research, it makes it logical, I think, to go ahead with the building at the present time.

I think I will stop at that point, Mr. Chairman, and not belabor it anymore. Just simply say that what they are doing is absolutely amazing. They are doing it in inadequate facilities.

This is an opportunity to provide the kind of facilities necessary for them to really do the job that we have charged them to do.

I hope the committee would look favorably on this request.

Mr. Bevill. Thank you very much. We will work with you and do the best we can.

[The statement of Hon. Joel Hefley follows:]

STATEMENT BY

CONGRESSMAN JOEL HEFLEY

BEFORE THE

SUBOMMITTEE ON ENERGY & WATER DEVELOPMENT

OF THE HOUSE COMMITTEE ON

APPROPRIATIONS

April 3, 1990

Summary

The U.S. Department of Energy has requested $4.5 million to begin construction of the Solar Energy Research Facility, or SERF, at the Solar Energy Research Institute in Golden. I would ask that the subcommittee approve that figure.

SERI is the nation's foremost facility for research in photovoltaics, or solar cells, for alternative and renewable energy. The Institute can be expected to grow in importance as the nation prepares to address environmental concerns.

SERI presently houses many of its laboratory operations in rented space at the Denver West office complex near Golden. These arrangements leave SERI unable to accommodate certain types of experiments and present vibrational problems that affect delicate instrumentation. General safety concerns exist, as well, regarding floor drains for chemical spills and heating and ventilation hoods for exhausting toxic gases.

Building the SERF would be cost-effective. Analyses conducted by the Energy Department consistently show construction of the SERF to be the preferred alternative over continued long-term leasing.

SERI -- Its Place and Its Needs

Mr. Chairman, I am pleased to testify today on behalf of the Energy Department's request for $4.5 million to further development of a new laboratory building -- the Solar Energy

(more)

Research Facility, or SERF -- at the Solar Energy Research Institute in Golden.

Being one of the congressmen who represent SERI has been one of the real pleasures of my time here in Congress. There at Golden, SERI has developed better ways to produce ethanol, improve the energy performance of buildings and has helped create 20 spinoff companies in Colorado. Today, the laboratory is working on ways to build more energy efficient refrigerators and its solar-flux research may harness the sun to treat hazardous wastes.

SERI is also a catalyst for research in the Denver area. The Institute will play an integral role with the Colorado School of Mines and the Colorado Department of Health in the study of high-altitude fleet emissions. SERI has also worked extensively with the National Consortium for Atmospheric Research and the NOAA Aeronomy Labs at Boulder, two of the world's leading centers for atmospheric and environmental research. It's at the center of an extensive research network woven throughout the Denver metropolitan area. In the coming years, important contributions to the nation's global change research will originate at NCAR and NOAA and SERI will play an integral role in that effort.

SERI's work is not confined to Colorado. The Institute has been involved in important work in other states, including Massachusetts, New Jersey, Pennsylvania, Maryland, California and Texas.

But finally, SERI's work should be viewed in a world context. It is estimated the international market for solar-cell technology will top $1 billion by 2000. The U.S. owned 80 percent of this market in the early 1980s, but that percentage is now less than 35 percent and under heavy pressure from West Germany and the Japanese.

Solar and renewable energy, the most environmentally benign of all energy sources, are wholly in concert with the public's growing concern over the environment. Solar energy could provide almost 20 percent of the nation's energy needs by 2010.

This year, the Bush Administration has indicated its commitment to alternative energy research by requesting $115.9 million for alternative energy research in its FY 1991 budget request. It is only fitting that the nation's premier solar energy laboratory have the resources it needs to conduct this research.

Existing SERI Lab Facilities are Inadequate

As originally conceived, SERI was to comprise three buildings on a 300-acre tract west of Denver.

To date, only one of these three buildings -- the Field Test Laboratory Building (1984) -- has been constructed. Most of the remainder of SERI's operations have been housed since 1977 in converted office space at the Denver West office park.

This arrangement has posed a number of operational limitations. In the photovoltaics area, materials research is being done at SERI which encompasses advanced state-of-the-art chemical and solid state physics. These disciplines carry stringent specifications on a building with regard to vibrational allowances and chemical handling capabilities. In addition, the air-handling capabilities of the Denver West building have been described as marginal.

SERI has done everything possible to deal with this situation managerially. The Institute has formed a safety committee and instituted constant training for its personnel in Building 16, its laboratory facility. It has instituted limits on the amount of chemicals allowed in Building 16 at any one time and installed triple-redundant safety features in that building.

These precautions have worked but at great expense in terms of time and resources. SERI estimates its overall operations are 25 percent less efficient due to these safety needs.

Building the SERF is Cost-Effective

Past lease-vs.-construct analyses conducted by the Department of Energy have consistently shown construction of the SERF to be the preferred alternative to continued long-term leasing at Building 16. The federal government currently pays $1.4 million a year to lease space in the Denver West office park for work that would be conducted in the SERF.

The safety requirements I mentioned carry costs. Two weeks ago, in letters to the chairman and ranking member, our delegation stated that continued use of leased, converted facilities would require the expenditure of at least $600,000 over the next six years to meet minimum safety standards. Those were conservative figures. I have since heard estimates ranging from $1.5 million a year to a total of $14 million to meet all federal safety standards, including installation of sprinklers on all floors, fire containment walls and other safety requirements.

Conceptual drawings for the SERF were completed in 1985 but funding for the building has been zeroed-out by the Office of Management and Budget every year since then. Given the figures I have presented, it's conceivable the SERF could pay for itself in six years.

Circumstances have positioned SERI to serve as the catalyst of a wide-ranging research effort. Now is the time to give that laboratory the tools it needs to do fill that role properly.

A Final Note

On Page 10 of its budget request, the DOE indicates its intention that the SERF will incorporate "life-cycle cost effective solar energy and energy conservation designs as required by PL 100-615."

I would like to voice my support for that intent and will, at a later time , submit further comments for inclusion into the hearing record.

This concludes my remarks.

JOEL HEFLEY
5TH DISTRICT, COLORADO

COMMITTEES
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April 23, 1990

The Honorable Tom Bevill
U.S. Congress
2302 Rayburn HOB
Washington, D.C. 20515-0104

Dear Tom:

Enclosed you will find a draft of suggested report language pertaining to the Solar Energy Research Facility at Golden, Colo. I referred to this language in testimony before the Energy and Water Development Subcommittee on April 3 and hope you will include it in the subcommittee's final report on this project.

The intent of this language is a simple one; that the builders of the nation's foremost photovoltaics laboratory consider the use of solar technologies in its design and, if those technologies can be used within the approved budget and without adversely affecting the purpose of building, they should be installed.

The suggested language also makes no distinction as to how this technology ~~should be~~ procured. Naturally, cost savings can probably be realized by purchasing these technologies from the private sector. At the same time, this language does not preclude the use of advanced technologies developed in-house, which might someday be transferred to the private sector.

Thank you for your consideration of this request.

Sincerely,

Joel Hefley
Member of Congress

JH:lh

cc: The Honorable John T. Myers
Mr. Scott Sklar, Solar Energy Industries Assoc.

Enclosure

It is the intention of this subcommittee that the design of the retype Solar Energy Research Facility, to be located at the Solar Energy Research Institute in Golden, Colo., attempt to incorporate energy conservation, passive solar design and solar thermal and electric equipment as an integral, as opposed to a demonstration part of the structure. If such designs are judged to be cost-effective and congruent with the primary purpose of the building, they should be installed. SERI shall keep the subcommittee advised on the extent of solar and energy saving technologies used in the building and the life-cycle cost savings of these technologies.

This statement of purpose is intended to be consonant with the philosophy expressed in section 801 (a) 1, chapter 141, Title 10 U.S.C., section 2394 pertaining to the procurement of photovoltaics by the Department of Defense in its own projects when cost effective.

TUESDAY, APRIL 3, 1990.

MICROELECTRONICS AND IMAGING SCIENCES RESEARCH

WITNESSES

HON. FRANK HORTON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW YORK

DR. M. RICHARD ROSE, PRESIDENT, ROCHESTER INSTITUTE OF TECHNOLOGY

Mr. BEVILL. Next, Congressman Frank Horton has just walked in. I know that you have to get back to your busy schedule. The Chair recognizes you.

Mr. HORTON. Thank you, Mr. Chairman.

Mr. BEVILL. Your prepared statement will be made a part of the record. You may just summarize.

Mr. HORTON. Your subcommittee has seen fit to provide funds under the Atomic Weapons Research Program for a special program of cooperative research between the Department of Energy and Rochester Institute of Technology. The research being conducted through this program has led to great advances in the fields of microelectric engineering and imaging.

It is my understanding that the Department of Energy has been enthusiastic about the work which has been completed to date and is currently negotiating with RIT concerning the continuation of these activities in fiscal year 1990, as was recommended by your subcommittee last year.

Dr. Rose will present a progress report on RIT's activities and a request for continued funding in fiscal year 1991. Dr. Richard Rose is President of the Rochester Institute of Technology. A very fine institute in my area.

I am very proud to present him to the subcommittee.

[The statement of Hon. Frank Horton follows:]

STATEMENT OF THE HONORABLE FRANK HORTON
BEFORE THE
APPROPRIATIONS SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

CHAIRMAN BEVILL AND MEMBERS OF THE SUBCOMMITTEE,

I WOULD LIKE TO THANK YOU FOR GIVING ME THE OPPORTUNITY TO ADDRESS THIS SUBCOMMITTEE, AND TO INTRODUCE DR. RICHARD ROSE, PRESIDENT OF THE ROCHESTER INSTITUTE OF TECHNOLOGY (RIT).

YOUR SUBCOMMITTEE HAS SEEN FIT TO PROVIDE FUNDS UNDER THE ATOMIC WEAPONS RESEARCH PROGRAM FOR A SPECIAL PROGRAM OF COOPERATIVE RESEARCH BETWEEN THE DEPARTMENT OF ENERGY AND RIT. THE RESEARCH BEING CONDUCTED THROUGH THIS PROGRAM HAS LEAD TO GREAT ADVANCES IN THE FIELDS OF MICROELECTRIC ENGINEERING AND IMAGING.

IT IS MY UNDERSTANDING THAT THE DEPARTMENT OF ENERGY HAS BEEN ENTHUSIASTIC ABOUT THE WORK WHICH HAS BEEN COMPLETED TO DATE AND IS CURRENTLY NEGOTIATING WITH RIT CONCERNING THE CONTINUATION OF THESE ACTIVITIES IN FY 1990, AS WAS RECOMMENDED BY YOUR SUBCOMMITTEE LAST YEAR.

DR. ROSE WILL PRESENT A PROGRESS REPORT ON RIT'S ACTIVITIES AND A REQUEST FOR CONTINUED FUNDING IN FY 1991. WE HAVE APPRECIATED THE CONFIDENCE YOUR SUBCOMMITTEE HAS HAD IN RIT IN THE PAST, AND ARE HOPEFUL THAT YOU WILL INCLUDE FUNDING AGAIN THIS YEAR TO CONTINUE THESE IMPORTANT RESEARCH ACTIVITIES.

THANK YOU FOR YOUR TIME AND I WILL NOW TURN IT OVER TO DR. ROSE.

Mr. **Bevill**. Dr. Rose.

Mr. **Rose**. Thank you, Congressman Horton, for your kind introduction.

Congressman Horton has been a great friend of the Rochester Institute of Technology for many years. Through his effort we have grown into one of the nation's leading technological universities.

Mr. Chairman, in 1987, the Rochester Institute of Technology, in conjunction with Congressman Horton, came to you with a proposal to use the unique and nationally recognized expertise at RIT in the areas of microelectronics engineering and imaging sciences to speed advancements in the development of technology used for the manufacture of microelectronic circuits. It was our belief that such advancements would have broad and important application to the Department of Energy Atomic Weapons Research Program.

Mr. Chairman, your subcommittee approved a grant of $800,000 in the fiscal year 1988 Energy and Water Development Appropriations Bill for the Department of Energy—Rochester Institute of Technology cooperative research program in microelectronics engineering and imaging sciences.

Last year, our institution worked closely with the Department of Energy in developing and carrying out a program of research in these areas which would address important key technological problems facing the DOE's Atomic Weapons Program.

I am pleased to report that RIT has submitted to the Department of Energy its final report on the fiscal year 1988 program of activities. RIT researchers were encouraged by the results which were achieved under the fiscal year 1988 grant program.

Mr. Chairman, we believe that the Department of Energy officials and scientists have likewise been favorably impressed with the findings. While initial research activities focused on ways to improve methods of fabricating microelectronic circuitry, the Department of Energy also became interested in RIT's leading edge imaging research involving remote sensing technology used for treaty verification, and target recognition, acquisition, location and assessment. As a result RIT scientists were invited to visit the Sandia National Laboratory last year to review work being conducted there and discuss the continuation and expansion of RIT research activities.

Mr. Chairman, the subcommittee saw fit last year to include language in the Energy and Water Development report recommending the continuation in fiscal year 1990 of the DOE-RIT Cooperative Research Grant Program at a level of $1,620,000. Preliminary discussions concerning the scope of the work for a fiscal year 1990 research program were held earlier this year.

Mr. **Bevill**. Could you wrap it up quickly? I am sorry we have to be so limited in time.

Mr. **Rose**. We have a complete statement for the record.

[The statement of Mr. Rose follows:]

TESTIMONY
BY
DR. M. RICHARD ROSE
PRESIDENT
ROCHESTER INSTITUTE OF TECHNOLOGY
BEFORE THE
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
COMMITTEE ON APPROPRIATIONS
HOUSE OF REPRESENTATIVES
WASHINGTON, D.C.

Thank you, Congressman Horton, for your kind introduction. You have been a great friend of the Rochester Institute of Technology over the years. Through your efforts, we have grown into one of the nation's leading technological institutions.

Mr. Chairman, in 1987, the Rochester Institute of Technology, in conjunction with Congressman Horton, came to you with a proposal to use the unique and nationally recognized expertise of RIT in the areas of microelectronics engineering and imaging sciences to speed advancements in the development of technology used for the manufacture of microelectronic circuits. It was our belief that such advancements would have broad and important application to the Department of Energy Atomic Weapons Research Program.

Mr. Chairman, your Subcommittee approved a grant of $800,000 in the Fiscal Year 1988 Energy and Water Development Appropriations Bill for a Department of Energy - Rochester Institute of Technology cooperative research program in microelectronics engineering and imaging sciences. Last year, our institution worked closely with the Department of Energy in developing and carrying out a program of research in these areas which would address important key technological problems facing the DOE's atomic weapons program. I am pleased to report that RIT has submitted to the Department of Energy its final report on the FY 1988 program of activities. RIT researchers were encouraged by the results which were achieved under the FY 1988 grant program.

Mr. Chairman, we believe that Department of Energy officials and scientists have likewise been favorably impressed by RIT's expertise and research results. While initial research activities focused on ways to improve methods of fabricating microelectronic circuitry, the Department of Energy also became interested in RIT's leading edge imaging research involving remote sensing technology used for treaty verification, and target recognition, acquisition, location and assessment. RIT research scientists were invited to visit the Sandia National Laboratory last year to review work being conducted there and discuss the continuation and expansion of RIT research activities.

Page Two

Mr. Chairman, your Subcommittee saw fit last year to include language in the Energy and Water Development report recommending the continuation in FY 1990 of the DOE - RIT Cooperative Research Grant Program at a level of $1,620,000. Preliminary discussions concerning a scope of work for an FY 1990 research program were held earlier this year between RIT and DOE officials, and we are hopeful that a final program of activities will be agreed upon and the $1,620,000 grant released. Your continued interest and support in these discussions with the DOE is certainly appreciated.

Mr. Chairman, the proposal we are submitting to you today is a request for $1,803,145 for a Fiscal Year 1991 program of continued cooperative research activities based on the results of our FY 1988 program and the anticipated results of our FY 1990 program. An outline of our FY 1991 program is contained in a more detailed proposal document which I would ask be inserted in the record along with my statement.

Mr. Chairman, RIT is appreciative of the recognition it has received from your Subcommittee and the DOE for its research excellence in microelectronic engineering and imaging sciences. RIT is proud of the results it has achieved in helping the DOE meet its atomic weapons research mission and is anxious to continue this program of activities in FY 1991.

Thank you, Mr. Chairman.

1751

RIT

ROCHESTER INSTITUTE OF TECHNOLOGY

A PROPOSAL

DEPARTMENT OF ENERGY - ROCHESTER INSTITUTE OF TECHNOLOGY COOPERATIVE RESEARCH GRANT PROGRAM IN MICROELECTRONIC ENGINEERING AND IMAGING SCIENCES AS RELATED TO ATOMIC WEAPONS RESEARCH ACTIVITIES

FISCAL YEAR 1991

A PROPOSAL

DEPARTMENT OF ENERGY - ROCHESTER INSTITUTE OF TECHNOLOGY COOPERATIVE RESEARCH GRANT PROGRAM IN MICROELECTRONIC ENGINEERING AND IMAGING SCIENCES AS RELATED TO ATOMIC WEAPONS RESEARCH ACTIVITIES

TABLE OF CONTENTS

I. INTRODUCTION 1

II. PROPOSED PROGRAM OF ACTIVITIES IN MICROELECTRONIC ENGINEERING AND IMAGING SCIENCES 3

  A. MICROELECTRONIC ENGINEERING -- RESEARCH DIRECTIONS IN LITHOGRAPHY 3

  B. IMAGING SCIENCES -- RESEARCH DIRECTIONS IN IMAGING 8

III. FISCAL YEAR 1991 COOPERATIVE RESEARCH GRANT PROGRAM BUDGET 13

IV. APPENDICES

  1. Report Language on FY 1988 DOE-RIT Cooperative Research Grant Program, House Appropriations Subcommittee on Energy and Water Development

  2. RIT Letter of Transmittal to DOE of Final Report on FY 1988 Cooperative Resarch Grant Program

  3. Report Language on FY 1990 DOE-RIT Cooperative Research Grant Program, House Appropriations Subcommittee on Energy and Water Development

IV. APPENDICES (continued)

4. Report Langauge on FY 1990 DOE-RIT Cooperative Research Grant Program, House-Senate Conference Committee on Energy and water Development Appropriations

5. Colloquy on FY 1990 DOE-RIT Cooperative Research Grant Program Between Chairman and Ranking Minority Member of the House Appropriations Subcommittee on Energy and Water Development and Represenative Frank Horton

6. FY 1990 Proposed Program of Activities, DOE-RIT Cooperative Research Grant Program

   A. Microelectronic Engineering

   B. Imaging Sciences

1754

INTRODUCTION

INTRODUCTION

FY 1988 Grant

In 1987, the Congress directed that $800,000 be made available to the Rochester Institute of Technology (RIT) to initiate a joint program of research with the Department of Energy (DOE) in microelectronic engineering and imaging science. The research program was to be designed to support the Department's research mission in the atomic weapons research and development program. The grant was made to RIT in recognition of its national expertise in the high technology fields of microelectronic engineering and imaging science. (See Appendix 1, House Appropriations Subcommittee on Energy and Water Development Language.)

FY 1988 Grant Report

In September 1988, the Department of Energy and RIT agreed upon a program of research in these areas which would be conducted in Calendar Year 1989. RIT researchers have recently completed the agreed upon research activities and have submitted a final report to the DOE. (See Appendix 2.)

During 1988, Department of Energy officials visited RIT and were favorably impressed by the institution's research capabilities in microelectronic engineering and imaging sciences. The Department has indicated that RIT's research program will make a significant contribution toward its research mission. Last year, RIT scientists visited Sandia and Los Alamos National Laboratories to review related DOE research activities and discuss the continuation of RIT's current research program. DOE officials and scientists from both National Laboratories also made a site visit to RIT last year.

FY 1990 Grant Proposal

In 1989, the Rochester Institute of Technology proposed that the Congress provide FY 1990 funding in the amount of $1,620,000 to continue and expand the DOE - RIT cooperative research program begun in FY 1988.

The House Appropriations Subcommittee on Energy and Water Development included language in its Fiscal Year 1990 report which directed the DOE to provide $1,620,000 for the proposed continuation of the DOE-RIT cooperative research program (See Appendix 3.)

The conference committee on the FY 1990 Energy and Water Development bill included additional language which praised the research capabilities of RIT in the microelectronic engineering and imaging sciences fields and urged the DOE to use RIT for accomplishing this type of work in the atomic weapons program. (See Appendix 4.)

A floor colloquy between the Chairman and the Ranking Minority Member of the House Appropriations Subcommittee and Representative Frank Horton, confirmed that it was the intention of the House conferees that the DOE should continue its research activities with RIT in FY 1990. (See Appendix 5.)

FY 1990 Grant Program Activities Discussions

Earlier this year, RIT began discussions with DOE officials on a scope of work for the $1,620,000 research grant which was recommended by the House Appropriations Subcommittee on Energy and Water Development. These discussions are continuing and will include another visit by RIT scientists to Sandia and Los Alamos National Laboratories. DOE officials have already visited RIT this year.

RIT scientists hope to finalize the scope of work for use of the FY 1990 grant in the near future and begin work immediately (See Appendix 6 for an outline of FY 1990 program activities now under negotiation with DOE.)

FY 1991 Grant Proposal

With the expectation that the DOE will agree on an FY 1990 program shortly, RIT is proposing a FY 1991 program of continued activities, based on the anticipated results of the FY 1990 program. This new proposal is contained in Section II of this document. RIT is appreciative of the recognition it has received from Congress and the Department of Energy for its research excellence in microelectronic engineering and imaging sciences. RIT is proud of the results it has achieved in helping the DOE meet its atomic weapons research mission in these areas and is anxious to continue this program of activities in FY 1991.

PROPOSED PROGRAM OF ACTIVITIES IN MICROELECTRONIC ENGINEERING AND IMAGING SCIENCES

FISCAL YEAR 1991

MICROELECTRONIC ENGINEERING

RESEARCH DIRECTIONS IN LITHOGRAPHY ADDRESSING THE DEPARTMENT OF ENERGY'S ATOMIC WEAPONS RESEARCH MISSION

FISCAL YEAR 1991
PROPOSED PROGRAM OF ACTIVITIES

Introduction

Rochester Institute of Technology (RIT) has been deeply involved in applied research in lithography for the manufacture of integrated circuits for the past 10 years. RIT has obtained an international reputation for its educational programs in microelectronic engineering. The United States only ABET accredited undergraduate program in Microelectronic Engineering now has 300 undergraduate students. The new Master of Engineering in Microelectronic Manufacturing has also been very successful and will have 20 full time students in the Fall of 1990. These ambitious educational programs are paralleled by the development of a semiconductor fabrication facility that is unequaled at any single university in the United States and the development of an applied research capability that in its infancy shows promise of a national caliber research contribution in the area of lithography for microelectronic and micromechanical devices.

RIT microelectronic engineering researchers have worked cooperatively with DOE scientists to design a program of research activities which will address general and specific goals of the DOE atomic weapons research program in microelectronics. The following FY 1991 proposed program of activities represents a continuation and expansion of previous activities and results.

General Research Directions

The microelectronic engineering program at RIT has identified several areas in which it will develop as primary research objectives. These are:

- **Lithography**
    - Electron Beam Maskmaking
    - Submicron Electron Beam Imaging
    - Resist Material Evaluation
    - Direct Write on Wafer
    - X-ray Maskmaking
- **Manufacturing of Silicon Integrated Circuits**
    - Process Development - CVD, Plasma Etching
    - Process Integration - Advanced NMOS, CMOS and Bipolar processes, mixed analog and digital
    - Robotics, automation, work-in-progress tracking, scheduling
    - Manufacture of Application Specific Integrated Circuits
- **Integrated Micromechanical Devices and Sensors**
    - Integrated Chemical Sensors
    - Mechanical Sensors

These areas will be augmented by work in electro-optic devices, photonics and G&As integrated circuits. However, these efforts need to be restrained to prevent distraction from the three main areas listed above.

Within the area of lithography there are many areas in which we will be working. All of these areas are interrelated as well as related to the other two areas of focus. For example: the area of resist material evaluation and modeling applies to areas of electron beam lithography, deep UV lithography, submicron imaging, etc. and must be understood to develop a new lift-off processes for manufacture of silicon sensors.

Research Directions in Lithography

Electron Beam Maskmaking

Electron beam lithography is the pivotal technology for all types of lithography. Optical lithography (Deep UV) will use photomasks on quartz made by e-beam technology. E-beam direct write on wafer is obviously dependent on developments in e-beam lithography. X-ray lithography will use masks made by e-beam lithography.

ASIC Capability

One of the main areas for the application of electron beam maskmaking is in making masks for VLSI application specific integrated circuits. The details of networking, transcription and pattern verification need to be mastered. Currently there are still a lot of developments in this area that need to be addressed if fast turn around, working ASIC devices are to be realized.

Submicron Electron Beam Imaging

The investigation of submicron e-beam imaging will involve the study of scattering and proximity effects. Low energy electron dose, thin resist coatings and organic resists may be best suited for this application. Plasma etching of chrome may be required to transfer the patterns.

Resist Material Evaluation

The evaluation and modeling of resist materials is especially important as the lithographic dimensions go submicron. Resist materials are characterized by their sensitivity, contrast and performance. Using RIT's Perkin Elmer Development Rate Monitor these parameters can be obtained for the new resist materials now becoming available.

Direct Write on Wafer

Direct write on wafer will be investigated using RIT's MEBES electron beam tool. To do this a special wafer holder will be obtained. Alignment, metrology, topology and featured related scattering will be investigated.

X-Ray Maskmaking

Soft x-ray masks can be made using layers of Boron Nitride or silicon or silicon carbide and absorber films such as gold imaged directly (similar to direct write on wafer) using RIT's MEBES capability. To do this work RIT will need to obtain a special substrate holder for these mask blanks for the MEBES system. Sputtering capability for boron nitride and gold will need to be developed. The evaluation of these masks will be done by developing contacts with industry. In Rochester we have Hampshire Instruments, Inc. a manufacturer of x-ray exposure systems. In nearby East Fishkill, N.Y., IBM has a new facility that will have x-ray exposure capability. Other alternatives are available as well.

SPECIFIC TASKS FOR FY 1991 DOE-RIT COOPERATIVE RESEARCH GRANT PROGRAM

The titles for these tasks remain the same as in the FY 1990 program but the specific objectives of each task represents a continuation and improvement in the technological level of each task.

Task 1: Electron Beam Maskmaking

The MEBES system is complete at this point. The Class 10 clean room enclosure is finished and the machine has been moved in and is operational.

Task 1 - Part 1

Is basically to continue to develop technology in the area of electron beam maskmaking. The techniques developed will be further optimized by statistical design of experiments. The studies will be expanded to include a variety of electron beam resists. We are especially interested in aqueous based e-beam resist materials and will develop processes for these materials. New areas of study in the area of mask defects will be initiated.

Task 1 - Part 2

We will develop the capability for producing photomasks to support the foundry operation at RIT. This will involve making photomasks for VLSI, NMOS and CMOS application specific integrated circuits designed by foundry customers. The major additional accomplishment will be in the area of networking, pattern verification, and mask inspection. Inspection equipment such as a KLA die to die equipment will be installed and integrated into maskmaking and research in maskmaking.

Task 2: Submicron Imaging

In this area we will develop RIT's capability for modeling submicron lithography. RIT is working on transferring PROLITH, a lithography modeling program written by Dr. Chris A. Mack of the U.S. Department of Defense, to the DEC VAX environment. We are also working with Berkley SAMPLE and Perkin Elmer PROSIM software. Other software packages will be evaluated as well.

One of the main goals of this task will be the assembly of an eximer laser (248nm) exposure system.

Task 3: Resist Material Evaluation

We plan to use RIT's Perkin Elmer Development Rate Monitor for the evaluation of the e-beam resist materials and Deep UV resist materials as mentioned above. We also plan to evaluate conventional resist materials and advanced resist processes. The major exposure tool for this work will be RIT's GCA 4800 stepper. Processes that use Contrast Enhancement Materials, Lift-off, Dyes, and Reversal will be studies.

Task 4: Direct Write On Wafer

During the 1989-90 time frame the necessary equipment was assembled to do direct write on wafer. This year's goal is to actually do direct write on wafer.

Task 5: X-Ray Maskmaking

The task here is to set up an LPCVD system for the deposition of boron nitride for use in x-ray maskmaking.

IMAGING SCIENCES

RESEARCH DIRECTIONS IN IMAGING ADDRESSING THE DEPARTMENT OF ENERGY'S ATOMIC WEAPONS RESEARCH MISSION

FISCAL YEAR 1991
PROPOSED PROGRAM OF ACTIVITIES

Introduction

Imaging Science is becoming an increasingly powerful tool in many areas of science and technology. Advances in detector technology, microelectronics, materials science, and information processing have made it possible to utilize imaging and electro-optical approaches to address increasingly complex and often totally new problems. The tasks described below represent areas where imaging may make significant contributions to subject areas or mission objectives under the Department of Energy's charter and, specifically to the Atomic Weapons Research Program.

Several of the tasks address issues related to components in the imaging chain needed for segmentation and classification of images for target detection. The increasingly complex problems associated with mobile missiles, counter measures and treaty verification require a more rigorous understanding of the end-to-end image chain for proper information extraction. Other tasks address issues associated with machine vision and imaging systems applicable to materials handling or inspection in an energy or materials production environment. Also included are some more fundamental imaging science or electro-optical tasks which would have broader application across many areas, including nuclear medicine, guidance and control, image processing and inspection.

The Center for Imaging Science at Rochester Institute of Technology has new opportunities to expand its research and graduate programs in advanced imaging topics. These opportunities arise at this time due to:

- The move into a new 70,000 square foot dedicated facility which, when fully operational, will likely be the most state-of-the-art research facility for imaging in the Nation.
- The commencement of a PhD program in the Fall of 1990

The new building has space allocated for laboratories covering approximately twenty applied topics in imaging, and at this time the Center is occupied with the task of designing sophisticated graduate experiments and procuring the specialized equipment which will be necessary to operate these laboratories.

The uniqueness of many of these laboratories, and the topics they cover is further enhanced by the collective imaging theme which closely relates many of the fields of application, and as such the Center has been identified as responding to an urgent national need for training skilled people in these areas. In particular, a specific grouping of these laboratories is deemed to be closely related to the specific needs of the Department of Energy. These laboratories cover the topics of:

- Electro-Optics
- Image Analysis
- Remote Sensing
- Solid State Imaging

The research activities within these laboratories will include considerable overlap and involve mutual needs for facilities and equipment. The continuation of the DOE-RIT Cooperative Research Grant Program in imaging would allow the Center for Imaging Science to establish base-line research facilities and graduate/postdoctoral support, and continue ongoing DOE Atomic Weapons Program related research activities, as elaborated in the following proposal.

Effects of the Atmosphere on Imaging Processes and Scene Characterization

Essentially all treaty monitoring as well as target detection and identification activities require imaging through the atmosphere. Because the atmosphere distorts and degrades both the spatial and radiometric appearance of scenes it is viewed under the best of circumstances as a hostile element. In order to design sensors and processing algorithms that function effectively in this hostile environment more rigorous methods of characterizing and accounting for atmospheric effects are required. This effort would be directed at the establishment of a facility aimed at characterizing the effects of the atmosphere on various types of imaging systems and for developing and validating methods for amelioration or removal of these atmospheric effects. This facility would link physical measurement capabilities, optical propagation models and actual imaging systems. In this way algorithms could be iteratively designed, evaluated and refined against real world conditions. This facility would be integrated into the north range laboratory on top of the CIS building. This laboratory was designed specifically to accommodate the type of slat range and atmospheric studies required of this facility.

Single Ended Spectral Transmissometer	$ 20,000
Dual End Spectral Transmissometer	$ 40,000
Visible and Infrared Target Tracking and Imaging System with Resolution Targets	$120,000
Personnel Support for System Integration	$ 45,000

Electro-Optical Properties of Imaging Devices

The Solid State Imaging Laboratory in CIS is developing a capability to study and analyze the electro-optical response of infrared focal plane arrays to incoming radiation. With our existing cryogenic dewar, readout electronics and fast data acquisition, we are able to study fundamental array properties (e.g. quantum efficiency, noise, dark current linearity). We intend to extend our capabilities into two energy-high flux radiation (as might be found in earth orbit or close to a reactor core) on the operation of FPAs both immediately after the time of the interaction and over the long term. Secondly, to study the variation in the sensitivity within the boundary of single pixels of the IR FPA. Such variations may act as a limit to detection of point targets. The equipment requested has been compiled so as to enhance our capabilities in the general area of IR FPA testing and in the two areas listed above in particular. In addition it will also enable our students to be familiar with and trained on facilities similar to those found in major corporations involved in this work in the USA. The total amount requested is $225,000 with the breakdown shown below:

Pulse Instruments Low Noise Focal Plane Array Test System	$ 80,000
IR Spot Scanning System	$ 60,000
Laboratory Calibration Sources	$ 40,000
Personnel Support for System Integration	$ 45,000

Surface and Sub-Surface Material Mensuration and Characterization on the Microscopic Level

Nondestructive evaluation and characterization of materials is of fundamental importance to the performance, reliability and survivability of many systems. The proposed facility will include a variety of distinct but related imaging techniques intended to establish a strong capability for material characterization work. There are basically four categories of technique that will be considered:

1) Ultra-high resolution microscopy and metrology, for the precision measurement and monitoring of submicron features, critical dimensions, defects (especially in semiconductors), Impurity identification and study of magneto-optic media;

   (Approximate cost: $52,940)

2) Precision amplitude and phase profilometry, for the accurate characterization of smooth surfaces, and their departure from ideal. Important objects in this category include ion-bombarded semiconductors, high optical power density mirrors, optical coatings, stepped dielectrics and optical disks;

   (Approximate cost: $10,000, as many components already exist)

3) Ultra-high sensitivity measurement and two and three dimensional mapping of non-linear optical parameters, for the characterization of non-linearity in new and existing optical media, including semiconductor doped optical filters, and synthetic crystals;

   (Approximate cost: $81,805)

4) Surface and sub-surface imaging and characterization of materials, including composites, for the detection of impurities, voids, and micro-cracks;

   (Approximate cost: $40,400)

   (Total Equipment Costs: $185,145; Personnel Costs: $40,000)

High Resolution Image Analysis System

In many imaging applications various types of photographic media still represent the highest quality image recording method. This is particularly true in many cases where ultraviolet and x-ray image information is important and when very high speeds are required to study extremely short duration events. Photographic media are typically used because of their very fine resolution. However, to extract the detailed quantitative information from the film in order to fully characterize the targets or processes imaged, the analog film images must typically be converted to digital formats that are more readily analyzed in a quantitative fashion. This requires a precision digitization facility capable of high radiometric and spatial accuracies and very fine resolutions. In many cases, the results of weeks of painstaking work on a laser induced fusion experiment are recorded in a split second by various imaging systems. Those results may remain locked in the images if the detailed information hidden there cannot be transformed into a form in which it can be processed and analyzed. This effort would be directed at acquisition of a system for detailed image digitization and the interface of that system into RIT's extensive digital image analysis facilities.

High Resolution Image Digitization Facility	$225,000

BUDGET

DEPARTMENT OF ENERGY - ROCHESTER INSTITUTE OF TECHNOLOGY COOPERATIVE RESEARCH GRANT PROGRAM IN MICROELECTRONIC ENGINEERING AND IMAGING SCIENCES

FISCAL YEAR 1991 PROPOSED PROGRAM OF ACTIVITIES

BUDGET

DEPARTMENT OF ENERGY - ROCHESTER INSTITUTE OF TECHNOLOGY COOPERATIVE RESEARCH GRANT PROGRAM IN MICROELECTRONIC ENGINEERING AND IMAGING SCIENCES

FISCAL YEAR 1991
PROPOSED PROGRAM OF ACTIVITIES

I. **Microelectronic Engineering Activities**

Maintenance - P-E MEBES System @ $7,000/Month	$ 84,000
Support for E-Beam Technician (Salary and Benefits @ 25%)	$ 25,000
Student Assistantships/Tuition (MS Level @ $20,000 each)	$ 60,000
50% Support for Professor and Director of E-Beam Lab (Salary and Benefits @ 25%)	$ 30,000
Software Specialist (Salary and Benefits @ 25%)	$ 40,000
Faculty Salaries for Research (Salary and Benefits @ 25%)	$ 30,000
Supplies and Expenses Related to E-Beam Lab	$ 20,000
Travel, Telephone, Publication Costs	$ 10,000
Secretarial Assistance @ 50% (Salary and Benefits @ 25%)	$ 3,000
Sub Total	$302,000
Overhead @ 40.12%	121,000
Total	$423,000

I. Microelectronic Engineering Activities (continued)

Equipment Purchase, Installation, Refurbishing

LPCVD Deposition System for Boron Nitride needed for X-Ray Maskmaking	$200,000
Software Related to Maskmaking	$100,000
IBM PS-2 Workstations to Tie Maskmaking to CIM System	$ 30,000
Substrate Cleaning System for Masks and Wafers	$150,000
Sub Total	$903,000

II. Imaging Sciences Activities

Effects of Atmosphere on Imaging Processes

Single Ended Spectral Transmissometer	$ 20,000
Dual End Spectral Transmissometer	$ 40,000
Visible and Infrared Target Tracking and Imaging System with Resolution Targets	$120,000
Personnel Support for System Integration	$ 45,000

Electro-Optical Properties of Imaging Devices

Pulse Instruments Low Noise Focal Plane Array Test System	$ 80,000
IR Spot Scanning System	$ 60,000
Laboratory Calibration Sources	$ 40,000
Personnel Support for System Integration	$ 45,000

II. Imaging Sciences Activities (continued)

Surface and Sub-Surface Material Mensuration and Characterization of the Microscopic Level

Ultra-high resolution microscopy and metrology, for the precision measurement and monitoring of submicron features, critical dimensions, defects (especially in semiconductors), Impurity identification and study of magneto-optic media;	$ 52,940
Precision amplitude and phase profilometry, for the accurate characterization of smooth surfaces, and their departure from ideal. Important objects in this category include ion-bombarded semiconductors, high optical power density mirrors, optical coatings, stepped dielectrics and optical disks;	$ 10,000
Ultra-high sensitivity measurement and two and three dimensional mapping of non-linear optical parameters, for the characterization of non-linearity in new and existing optical media, including semiconductor doped optical filters, and synthetic crystals;	$ 81,805
Surface and sub-surface imaging and characterization of materials, including composites, for the detection of impurities, voids, and micro-cracks;	$ 40,400
Personnel Support for System Integration	$ 40,000

High Resolution Image Analysis System

High Resolution Image Digitization Facility	$225,000
Sub Total	$900,145

Sub Total (Microelectronic Engineering)	$ 903,000
Sub Total (Imaging Sciences)	$ 900,145
Total Program	$1,803,145

APPENDIX 1

FISCAL YEAR 1988

HOUSE ENERGY AND WATER DEVELOPMENT

REPORT LANGUAGE

1774

ROCHESTER INSTITUTE OF TECHNOLOGY

100TH CONGRESS
1st Session

HOUSE OF REPRESENTATIVES

REPORT
100-498

MAKING FURTHER CONTINUING APPROPRIATIONS FOR THE FISCAL YEAR ENDING SEPTEMBER 30, 1988

CONFERENCE REPORT

TO ACCOMPANY

H.J. Res. 395

DECEMBER 22 (legislative day, DECEMBER 21), 1987.—Ordered to be printed

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U.S. GOVERNMENT PRINTING OFFICE

80-100

WASHINGTON : 1987

Oregon Graduate Center and $500,000 to initiate a research effort in membrane-based technologies at the center.

Cooperative and Other Programs.—The conferees agreed to provide $2,000,000 to support the cooperative effort between the Lawrence Berkeley Laboratory, the Ana G. Mendez Educational Foundation and Jackson State University. Funding for this program is included under Applied Mathematical Sciences.

From within funds available in the Basic Energy Sciences Program, $11,740,000 is to be made available to continue the ongoing program at the Florida State University supercomputer center.

University Research Support.—The conferees agree to provide $5,000,000, to be made available on a competitive basis, to University nuclear engineering programs. These monies are to be made available for graduate fellowships, direct research support, pass through research support, and educational support programs in the field of nuclear engineering.

General Purpose Facilities.—Because of budget restraints, the conferees have proposed a $3,000,000 general reduction.

URANIUM SUPPLY AND ENRICHMENT ACTIVITIES

The conferees agree to provide $950,000,000 for Uranium Supply and Enrichment Activities instead of $1,162,793,000 as proposed by the House and $1,116,000,000 as proposed by the Senate.

The conference agreement transfers $104,000,000 of prior year funds from this account to the Energy Supply, Research and Development appropriation.

GENERAL SCIENCE AND RESEARCH ACTIVITIES

The conferees agree to appropriate $804,498,000 instead of $805,998,000 as proposed by the House and $824,498,000 as proposed by the Senate.

The conferees agree that $25,000,000 shall be made available for continued Superconducting Super Collider R&D. While no funds are provided for initiating construction activities, the conferees intend that R&D, site selection studies and other technical support activities be continued during FY 1988.

The conferees agree to delete language proposed by the Senate requiring economic benefit evaluations associated with the Superconducting Super Collider.

The conferees agree that $33,500,000 shall be made available for the construction of the Continuous Electron Beam Accelerator Facility (CEBAF).

As a matter of highest priority, the conferees, the Committees, and the Congress expect the Department to operate and maintain the recently completed major high energy physics facilities to the fullest extent possible.

The conferees agree that within the funds available for high energy technology, the Department should make available $3,000,000 to support the development of particle accelerators at the Texas Accelerator Center.

NUCLEAR WASTE DISPOSAL FUND

The conferees agree to appropriate $360,000,000 as proposed by the Senate instead of $500,000,000 as proposed by the House.

ATOMIC ENERGY DEFENSE ACTIVITIES

The conferees agree to appropriate $7,749,364,000 for Atomic Energy Defense Activities as proposed by the Senate instead of $7,813,284,000 as proposed by the House.

WEAPONS ACTIVITIES

The conferees agree to delete language proposed by the Senate which would have made funds available for wind research.

The conferees direct the Department to allocate $800,000 of Research and Development funding to the Rochester Institute of Technology for microelectronic research that will contribute to improved capability for DOE atomic energy defense programs and assist in developing advanced technological approaches to manufacturing microelectronic circuits.

While funds have not been provided for production of a new SRAM II warhead, the conferees agree that $9,400,000 should be added above the budget request for the SICBM production facility due to the interrelationship between production of the SRAM II and SICBM warhead production facilities.

The donferees agree that any transfer of the Los Alamos Fire Department equipment from the Department of Energy to the incorporated county of Los Alamos, NM, including any upgrading of equipment in anticipation of any transfer should not be accomplished at this time.

The conferees agree that the amount available for Production and Surveillance should be reduced to $1,853,830,000.

INERTIAL CONFINEMENT FUSION

The conferees have provided $8,000,000 for capital equipment for the Inertial Confinement Fusion program, which is at a level similar to prior years.

The conferees agree on the following allocation of operating funds:

Glass laser program	$93,000,000
Gas laser program	30,000,000
Pulsed power experiment	28,00,000
Total	151,000,000

Within the glass program $68,300,000 is provided for the program at LLNL, $14,300,000 for the program at KMSF, and $10,400,000 for the program at the Univesity of Rochester. Funding for the NRL glass laser activities should not be less than $2,500,000 and should be provided for from within the glass laser program funding.

The conferees agree that $2,000,000 of the amount provided for operating funds for the glass laser program is for preliminary design engineering and development and related studies for the upgrade of the Omega Laser at the University of Rochester. Further appropriations are contingent on a determination by the

APPENDIX 2

LETTER OF TRANSMITTAL TO DEPARTMENT OF ENERGY FINAL REPORT ON FISCAL YEAR 1988

Rochester Institute of Technology

Office of Government and Community Affairs

January 31, 1990

Dr. Marshall Sluyter
Chief, Weapons Research Branch
D. P. 242.2
Department of Energy
Washington, D.C. 20545

Dear Marshall:

Enclosed are five (5) copies of our final report for our Department of Energy grant for research and related activities in microelectronic engineering and imaging science. I have also sent two copies to Valerie Pastore in the DOE Procurement Office and one to John Rudolph for his review as well. We have also sent to Ms. Pastore the required financial reports and other related documents. A copy of the summary financial report is also enclosed for your information.

I understand from our previous discussions that these reports will be shared with the federal laboratories at Los Alamos and Sandia for their review. Following that, we would like to arrange for the appropriate faculty to visit the laboratories and meet with other scientists with mutual interests to identify opportunities for further collaboration. We would like to begin to discuss a statement of grant objectives with DOE for the current fiscal year as soon as possible.

We will be glad to supply additional copies of these reports if that would be helpful to you.

Please let me know if you have any questions or if there is anything further we can provide at this time. I will give you a call in the near future to follow up on the status of our report.

Thanks for all your assistance and cooperation. We look forward to continuing to work with the Department of Energy.

Sincerely yours,

Deborah M. Stendardi
Director

Enclosures

50 West Main Street · Rochester, New York 14614-1274 · 716-475-4987 · FAX 716-475-5097

1778

ROCHESTER INSTITUTE OF TECHNOLOGY

DR. LYNN FULLER

MICROELECTRONIC ENGINEERING

DOE FINAL REPORT

OCTOBER 1988 TO NOVEMBER 30, 1989

ROCHESTER INSTITUTE OF TECHNOLOGY - DR. LYNN FULLER
MICROELECTRONIC ENG - DOE FINAL REPORT OCT 1988 TO NOV 30 1989

SUMMARY:

The objectives of this work is the development of improved processes in microelectronics manufacturing, and in particular microlithography. The approach includes the setting up an electron beam lithography system and initiating research efforts in microlithography, microlithographic materials evaluation and process development. The results will be the capability for research in lithography, electron beam maskmaking, submicron electron beam imaging, electron beam resist material evaluation and direct write on wafer. A viedo tape course on the princilples of cleanrooms and contamination control will be produced and used for orientation of new personnel to the proper use of the clean room facility.

PUBLICATIONS:

"Acetylene Functional Polyimide Oligomers, New Thin Film Organic Dielectrics for VLSI Interlevel Applications", D.J.Capo and R.D.Rossi, National Starch and Chemical Co., K.H.Hesler and L.F.Fuller, Rochester Institute of Technology, 3rd International SAMPE Electronic Conference, June 20-23, 1989, Los Angeles, CA.

"Joint University and Industry Investigation of Polyimide for Thin Film Organic Dielectrics for VLSI Interlevel Applications", K.H.Hesler, L.F.Fuller, Rochester Institute of Technology, D.J.Capo, R.D.Rossi, National Starch and Chemical Corporation, 8th Biennial University/Government/Industry Microelectronics Symposium, June 12-14, 1989, Westborough, MA.

"Ion Beam Image Reversal and Thermal Stabilization of KTI820 Photoresist", Frank Schmidt, Masters Thesis, Rochester Institute of Technology, Rochester, New York, May 1989

"Photolithographic Laboratory Instruction at Rochester Institute of Technology", B.W.Smith, K.H.Hesler, L.F.Fuller, T.Chomicz, Proceedings of the 8th Annual University/Government/Industry Microelectronics Symposium, June 1989

"Image Reversal Optimization and a Positive Tone Lift-off Process with AZ5214-E Photoresist", Robert C. Lindstedt, 5th Year Microelectronic Engineering Student, Rochester Institute of Technology, Senior Research Project, RIT Journal of Microelectronic Research, Volume IV, May 1989

"Silylation of Positive Photoresist", Donald R. Koszelak, 5th Year Microelectronic Engineering Student, Rochester Institute of Technology, Senior Research Project, RIT Journal of Microelectronic Research, Volume IV, May 1989
"Characterization of a New E-Beam Resist", Brian Fetzer, 5th Year Microelectronic Engineering Student, Rochester Institute of Technology, Senior Research Project, RIT Journal of Microelectronic Research, Volume IV, May 1989

"Study of the Characteristics of Dyed Photoresist", Brad Campbell, 5th Year Microelectronic Engineering Student, Rochester Institute of Technology, Senior Research Project, RIT Journal of Microelectronic Research, Volume IV, May 1989

"Analysis of KTI-820 Positive Resist Using the Perkin Elmer Development Rate Monitor", Maia Bodnarczuk, 5th Year Microelectronic Engineering Student, Rochester Institute of Technology, Senior Research Project, RIT Journal of Microelectronic Research, Volume IV, May 1989

"Using the GCA 4800 DSW Wafer Stepper as a Photorepeater for the Fabrication of Chrome and Aluminum Masks", Scott M. Bruck, 5th Year Microelectronic Engineering Student, Rochester Institute of Technology, Senior Research Project, RIT Journal of Microelectronic Research, Volume IV, May 1989

TASKS:

TASK 1: INSTALLATION OF ELECTRON BEAM LITHOGRAPHY SYSTEM

Cleanroom construction was begun in February 1989. This project is a class 10 cleanroom for the MEBES write unit and a class 100 cleanroom for the console unit. The cleanroom fabrication was handled by Comp-Aire, Inc. at a cost of just over $300,000.

Cleanroom construction was completed in June 1989. The MEBES I has been placed in the room and the room has been qualified for temperature control (+/- 0.1 °C) and class 10. A motor generator set has been obtained (donation from IBM Burlington VT) and installed to provide clean power to the MEBES I system.

Additional equipment was obtained to support the electron beam system. A Sputtering system was obtained (donated by Ohmtek Inc., Niagara Falls, NY) and is now on campus and is being refurbished. APT processing equipment was obtained and has been refurbished and made to work.

Chrome coated photomask blanks were coated with Mead-COP e-beam resist from Olin Hunt. The spincoating process results in 0.5 um +/- 10 nm thick coatings over 4" on a 5" by 5" plate. Several photomask blanks were coated and sent to Perkin Elmer ALO Division in Danbury, CT to be written with their MEBES I system. Once these photomasks were returned we developed them using our APT processors and chemicals and the resulting images were evaluated. The objective of this exercise was to verify a process for developing e-beam exposed photomask blanks so that when our MEBES I system is brought up we can qualify it with a known development process.

We expect to receive as a donation a KLA-200 die-to-die mask inspection system, a MEBES casette for 4" wafers, a Perkin Elmer

Pattern Verification System, and a GCA VLSI Design system in early 1990.

Perkin Elmer has entered into a maintenence agreement with RIT and has sent their installation experts to RIT to help with the initial installation and training of RIT personnel. The expected date at which the RIT MEBES will be qualified and turned over to RIT faculty and students for research is January 15, 1990.

TASK 2: MICROLITHOGRAPHY, MATERIALS EVALUATION AND PROCESS DEVELOPMENT

Several pieces of additional equipment were obtained which will be used for the electron beam project and for lithography research in general. A NANOSPEC film thickness measurement system was obtained (donation from Nanometrics Inc.) and is now used routinely. A BREWER hot plate was purchased and installed for soft bake, hard bake and post exposure bake. It is capable of temperatures up to 400 °C and thus can be used for cureing polyimide materials. A spinner was purchased for spin coating large substrates up to 5" by 5". This will be used for 5" wafers and photomasks. A new GCA 1009 4" wafertrac was donated to by GCA and will be used for coating and developing 4" wafers. This machine is designed for advanced lithographic processes such as HMDS vapor prime and multiple layer resist coating schemes.

Several evaluations were completed by students doing their senior projects including investigations of KTI-820 Photoresist, Use of the GCS-4800 as a Photrepeater, Dyed Photoresist, E-Beam Resist, Silyation of Positive Photoresist, and Image Reversal of AZ5214-E Photoresist. The results of their work is published in RIT's annual Journal of Microelectronics Research, Volume IV.

PROLITH a software by Dr. Chris A. Mack, U.S. Department of Defense was obtained. This software was converted so that it can be used on the RIT VMS/VAX campus computer.

120 Chrome coated quartz photomask blanks have been obtained (donated by Digital Equipment Corp.) and will be used in the qualification and set up of the MEBES I system.

In addition to the specific findings in the studies mentioned above the major results of this task is the creation of the capability for the study of microlithography, materials and processes.

TASK 3: DEVELOPMENT OF INSTRUCTIONAL VIDEOTAPE FOR USE IN ORIENTATION OF NEW PERSONNEL TO THE PROPER USE OF THE CLEAN ROOM FACILITY

A short course entitled "Principles of Cleanrooms and Contamination Control" was developed and advertised for an offering to 15 industry people in June of 1989. The course materials and outline form the basis of the videotape developed for the Department of Energy. The resulting six hour viedo tape short course entitled Principles of Cleanrooms and Contamination Control is now available. One copy has been delivered to Don Davis at Sandia National Laboratory. Additional copies are available from Dr. Lynn Fuller, Director of Microelectronic Engineering, Rochester Institute of Technology, 1 Lomb Memorial Drive, Rochester, N.Y. 14623.

BEST AVAILABLE COPY

Rochester Institute of Technology
Center for Imaging Science

SELECTION OF OPTIMAL TEXTURAL FEATURES FOR MAXIMUM LIKELIHOOD IMAGE CLASSIFICATION

RIT/DIRS Report #89/90-56-131
January 1990

Prepared for

United States Department of Energy
Contract DE-FC01-88DP20153 (Task 1)

Prepared by

Wendy L. Rosenblum
Carl Salvaggio
John R. Schott

1786

1.0 INTRODUCTION AND SUMMARY

The classification or segmentation of images into land cover or object class is one of the fundamental remote sensing/image processing tasks. The classification techniques have reached a high level of maturity in the forms of statistical pattern recognition techniques applied to multispectral images. According to this approach each pixel has a spectral vector associated with it and pixels are segmented into the class they most closely resemble spectrally. While these techniques are reasonably successful they do not take advantage of the brightness patterns within a class or at object boundaries nor are they readily applicable to monochrome images or highly correlated multispectral images (e.g. true color images). To overcome these limitations several investigators have suggested the use of image derived features as additional factors for use in image classification. Robert (1989) has identified over forty textural features that have been suggested by various authors as useful for scene classification. Regrettably it is very compute intensive to generate all these features for every pixel in an image and to then use them in a classifier. Schott *et al.*(1988) developed a technique for selecting a small subset of spectral bands from a large set based on criteria intended to optimize maximum likelihood classification. Salvaggio *et al.*(1990) have implemented code to generate 46 image derived textural features and applied a two-step feature reduction and optimization process based largely on the band selection process of Schott *et al.* (1988). The current effort drew on this proof-of-concept work mentioned above and improved on several limitations noted in the earlier work. Specifically; the initial feature set reduction algorithm of Robert (1989) is shown to be deficient and an improved method implemented. The spectral band optimization routine of Schott *et al.* (1989) is applied to feature selection and refined to generate a more truly optimum feature set, the feature generation algorithms developed on the proof-of-concept effort were completely rewritten so that the feature selection and classification process could be implemented in reasonable time frames, and finely the techniques were tested for classification accuracies and consistency of features selected.

For the four scenes tested the classification accuracies on independent data sets were ~96% indicating a strong potential for the use of texture based features in classification and scene segmentation. Furthermore the optimization technique is shown to have considerable value in isolating useful features from the overwhelming number of features which could have been suggested for use in segmentation. The optimization and classification tools developed here are image and feature independent and can be applied to any classification or segmentation problem.

1787

Rochester Institute of Technology
Center for Imaging Science

THERMAL INFRARED SCENE SIMULATION

FINAL REPORT #RIT/DIRS 89/90-51-133

JANUARY 1990

Prepared for

United States Department of Energy
Contract #DE-FG01-88DP 20153

Task 2

Prepared by

James S. Warnick
Eric Shor
John R. Schott

Chester F. Carlson Building, P.O. Box 9887, Rochester, NY 14623-0887

Section 1

Introduction and Summary

The complexity and interplay between the thermodynamic and radiometric phenomena associated with longwave infrared (LWIR) images make the analyses of these images quite difficult and the development of algorithms for image analysis quite complex. This image analysis process is further complicated when the algorithms are part of a real-time targeting, tracking, or positioning system because the sensor's electro-optical system can have a significant and variable impact on the image. As a result, it is often desirable to perform evaluations of fully packaged thermal infrared imaging systems against dynamic scenes. The high cost of field testing these systems prohibits this approach in all but the research and development and early engineering stages. Even in the research and development stage the scenarios required for full system testing are often difficult to acquire. These factors have led to the search for a capability to produce a synthetically generated, self-emitting thermal infrared scene which can be dynamically updated. Sensors or algorithms exposed to this simulator could then be tested in an end-to-end (buttoned up) configuration to evaluate system performance in as close to a real world scenario as practical. One major goal of this effort was to assemble and test the performance characteristics of a system for generating dynamic self-emitting scenes. The system consisted of an argon laser source, a spatial light modulator to generate a brightness image and a two-dimensional visible- to-infrared transducer to convert the monochromatic laser energy into a broad band self-emitting thermal infrared image.

A second major objective of this effort was the development of a capability to produce synthetic LWIR digital images. These synthetically generated LWIR digital images are viewed as an end in themselves for use in sensor design tradeoffs, algorithm development, interpretation aides, and in reverse engineering studies. In addition, as self-emitting scene generation capabilities are developed, synthetic images will be required as input to the spatial light modulator to appropriately model the brightness variations required for scene generation. The emphasis on this effort was to correctly model the LWIR scene radiometry with emphasis on energy matter interaction and radiation propagation. In particular, angular emissivity effects and reflected background and skydome radiance are treated along with standard self-emission, atmospheric transmission, and path radiance effects.

The results of this effort demonstrate the potential for generation of self-emitting scenes and include procedures for characterizing the temporal response, MTF, dynamic range, and NEΔT of these systems. The capability for generation of synthetic digital scenes from faceted wire frame models is also demonstrated as part of this effort.

1790

Rochester Institute of Technology
Center for Imaging Science

TECHNIQUES FOR MEASUREMENT OF THE OPTICAL PROPERTIES OF MATERIALS

FINAL REPORT #RIT/DIRS 89/90-51-134

JANUARY 1990

Prepared for

UNITED STATES DEPARTMENT OF ENERGY
CONTRACT #DE-FG01-88DP 20153

TASK 3

Prepared by

John R. Schott
Mark Fairchild
Xiaofan Feng
Rolando Raqueno
Bernard Brower
Timothy Gallagher

Chester F. Carlson Building, P.O. Box 9887, Rochester, NY 14623-0887

1. Introduction

This effort is aimed at the general area of measurement of the optical properties of materials. The type of measurement techniques addressed here are applicable to any studies where optical means are used to study the characteristics of a material. However, the devices developed were designed to accommodate materials as they might be found exposed outdoors, as well as prepared laboratory samples. The specific areas of study addressed were:

1. The development of a field operable normal hemispheric emissometer and an angular hemispheric emissometer. These devices are capable of measuring the emissivity of laboratory and natural samples in the midwave infrared (3-5 μm and the longwave infrared (8-14 μm). These data are necessary for quantitative assessment of thermal images and for radiometric modeling of infrared imaging processes for data analysis, scene simulation, and sensor evaluation. Section 2.1 describes the devices, their theory of operation, and the measurement results obtained.

2. Measurement of the directional reflectance factor for reflectance standards and development of a functional means for characterizing the angular reflectance factors. A major limitations associated with studies of the reflectance characteristics of materials is the lack of well defined standards. This study characterizes the visible bidirectional wavelength reflectance properties of several standards in the primary plane. It also addresses the question of reproducibility of standards and the variation in standards that can result from slightly different preparation techniques. A major goal of this effort was the development of simple mathematical function to describe the bidirectional reflectance data. The procedures used, measurements, and functional descriptor successfully developed on

the effort are described in Section 2.2.

3. Definition and development of a device for measurement of the spectral bidirectional distribution function (BRDF). This measurement of directional reflectance outside the primary plane as a function of wavelength represents a much needed but very difficult to obtain data set. This effort was aimed at designing an instrument, assembling the device, and developing and implementing a theory for calibrating the device. Section 2.3 describes the theory, design characteristics, and operation of the device successfully assembled for obtaining full BRDF measurements over a spectral range from 0.4 to 2.4 μm with a 10 nm spectral band width.

This measurement theory presented here and the devices developed to implement them represent a unique set of tools essential to a more effective use of imaging systems for extracting information about materials, objects, and scene content.

2. Technical Discussion

This section will present the theoretical background, technical approach, and results of each of the measurement activities pursued under this task. For continuity, each approach is treated completely in a separate sub-section. The emissivity measurements are treated in Section 2.1, directional reflectance standards in Section 2.2 and the BRDF instrument in Section 2.3. The results and recommended future directions are summarized in Section 3.

2.1 Emissivity Measurements

This section will address the work done on assembling and testing an emissometer capable of field measurements in the midwave infrared and

Rochester Institute of Technology
Center for Imaging Science

VISUAL TARGET DETECTION AND RECOGNITION

FINAL REPORT #RIT/DIRS 89/90-53-136

JANUARY 1990

Prepared for

UNITED STATES DEPARTMENT OF ENERGY
CONTRACT #DE-FG01-88DP 20153

TASK 4

Prepared by

Pantazis Mouroulis

Chester F. Carlson Building, P.O. Box 9887, Rochester, NY 14623-0887

TASK 4
VISUAL TARGET DETECTION AND RECOGNITION

AIM

Understand the interaction between visual instrument and observer, in a way that permits meaningful specification of the required optical quality of a visual optical system. The work also yields insight into improved quality criteria for automated production, and a better understanding of accommodation effects on instrumental vision.

INTRODUCTION

The term "visual instrument" is used here to indicate a lens system that is used for enhancing vision, such as a telescope. Although such instruments have been around for centuries, their image quality is not well understood. The reasons for this include inadequate knowledge of the characteristics of the eye and insufficient experimental results on the eye/instrument system. The critical characteristic of such instruments is that they are coherently coupled to the eye and thus cannot be considered in isolation; conversely, naked-eye data are not necessarily applicable to predicting subjective behavior with a visual instrument.

It has been demonstrated [Burton and Haig, 1981] that the most often used production criterion, namely MTF measurement, fails to correlate with subjective performance. The work of Giles [1977] and of Mouroulis [1981, 1982, 1988] has provided some answers to why that should be the case. However, no alternative image quality criterion has emerged [Burton and Haig, 1984]. This is largely because there are not enough experimental performance data on which to base a model.

Instrumental image quality is characterized by aberrations which may be inherent in the optical design, or may be due to manufacturing tolerances. Of the various aberrations potentially present in a design, the most troublesome are astigmatism, field curvature and transverse color; there are fundamental limitations to how much these aberrations can be corrected. The eye may add more aberrations, but the most obvious and important one is defocus (accommodation), which may be beneficial or detrimental to the quality of the retinal image.

We now have some understanding of the various aberration effects on subjective performance thanks to the work of Giles [1977], Charman and Whitefoot [1978] and Mouroulis [1981, 1982, 1988]. However, there are some serious gaps in the current knowledge. For example, transverse chromatic aberration effects have not been investigated in a systematic manner, despite the fact that this can be the limiting aberration in certain designs. The importance of an accurate accommodation response has only recently been fully appreciated, but the image acquisition process in the presence of an unsteady response is far from understood. Detection, resolution and recognition tasks in the presence of aberrations and with limited observation time have not been investigated, even though detection of an object at the edge of the field may depend on a single, fleeting observation. Finally, the question of objective image quality metrics that correlate with subjective performance has remained unanswered. The research described below addresses the most urgent of the above questions.

Three experiments are described: 1. influence of transverse chromatic aberration on target detection and resolution, 2. evaluation of the effects of combined aberrations and image quality criteria, and 3. field curvature simulation and the effect of limited observation time on observer performance. Of these experiments, the third has been completed and the other two are ongoing, scheduled for completion by June.

STATUS AND RESULTS

Experiment 1: Transverse Chromatic Aberration Tolerance

Aim: Determine the tolerance to transverse chromatic aberration for visual optical systems.

Background: Transverse color is often an unavoidable aberration in eyepiece design, and in certain cases, even nominally corrected systems have substantial amounts of secondary color [Hopkins, 1961]. Commonly, it is assumed that 2.5' or so of transverse or secondary color can be tolerated [Hopkins 1961, Kingslake 1978]. Conrady has given a wavefront tolerance of .5λ for the chromatic "D-d" sum, named after him [Conrady, 1960], which is a re-statement of the Raleigh quarter-wave criterion. Conrady's recommendation would normally lead to too tight a tolerance, while Hopkins makes no reference to psychophysical data supporting his recommendation. In both cases, the tolerances were established before the concepts of MTF and sinusoidal contrast sensitivity emerged. Virtually all early subjective measurements were conducted with some form of high contrast resolution target, such as a Cobb chart, and were therefore limited in generality. Starting in 1976, the visual tolerance to all primary aberrations has been re-examined with modern concepts and techniques, with the single exception of transverse color.

Apparatus: The following equipment was acquired for the project: HP 387 computer, Super-Oslo optical design software, Mitsubishi 1280x1024 color monitor and Number Nine Pro 1280 color graphics board. Using the optical design software, a telescopic viewer that presents significant amount of transverse color but only small amounts of other aberrations has been designed and constructed. The color monitor is used for generating the test patterns. Computer programs have been written to generate sinusoids and other targets of different frequencies and contrasts on the screen.

The viewer is a 1x "telescope", focused at approximately 2.7m, presenting an image at -1D (1m in front of observer). Image location can be varied, but it is chosen to approximate the resting state for accommodation [Toates, 1972] and the preferred dioptric setting for afocal instruments [Home and Poole, 1977]. The schematic is shown in fig. 1. A color-corrected doublet is used as the objective. The transverse color is introduced at the eyelens, which is of the modified Kellner design. The objective and field lens are less critical to the overall performance, so they are off-the-shelf components, with known design prescriptions. The eyelens had to be specially made.

Table 1 summarizes the wavefront aberration performance of the design. Figure 2 shows spot diagrams at three different field angles.

1796

Rochester Institute of Technology
Center for Imaging Science

SIGNAL PROCESSING

FINAL REPORT #RIT/DIRS 89/90-50-135

JANUARY 1990

Prepared for

UNITED STATES DEPARTMENT OF ENERGY
CONTRACT #DE-FG01-88DP 20153

TASK 5

Prepared by

Roger L. Easton, Jr.

Space-variant coordinate transformations may be profitably applied to many signal-processing problems; for example, image convolutions are often computed by multiplying the Fourier transforms of the images rather than by direct methods (*i.e.* shift, multiply, and add). Some signal-processing algorithms are presently under study that operate on projection-based representations of the function. The best-known projection representation is the Radon transform (Radon, 1917) (Easton, 1986), which is the mathematical basis for several medical imaging techniques, *e.g.* medical computed tomography (CT or CAT) and nuclear magnetic resonance imaging (MRI). The Radon transform reduces the two-dimensional (2-D) data set to a series of 1-D line-integral projections at each azimuth.

Before we derive the relevant properties of the Radon transform, a word about mathematical notation is in order. We will be dealing with functional representaions in both the space and spatial-frequency domains, and in Cartesian and polar coordinates. Vectors are denoted by bold-face fonts and scalars by normal fonts, *e.g.* **r** and x,y. Cartesian coordinates in either domain are set off by square brackets while polar coordinates are denoted by parentheses, *e.g.* [x,y] and (r,θ). Cartesian spatial frequency coordinates are denoted by the Greek letters $[\xi,\eta]$. Normal spatial or frequency representations are denoted by lower-case and upper-case roman characters, respectively, *e.g.* f[x,y] and $F[\xi,\eta]$. The projection of a spatial representation f[x,y] is denoted by λ, and the frequency representation of the projection by upper-case, Λ. The position vector (space domain) will be denoted by **r**, while the spatial-frequency vector is $\boldsymbol{\rho}$.

To derive the Radon transform of a 2-D spatial function (*i.e.* an image) f[x,y], consider a single line integral of f that is specified by the distance of closest approach of the line of integration to the origin and the angle of that line relative to the x-axis. The vector that defines the point of closest approach to the origin is **p**, or (p,ϕ) in polar coordinates. This is sometimes called the *pedal vector*. The pedal vector may also be expressed as $\hat{\mathbf{n}}p$, where $\hat{\mathbf{n}}$ is the unit vector at azimuth angle ϕ, and therefore may be expressed in Cartesian and polar coordinates as:

$$\hat{\mathbf{n}} = [\mathrm{COS}\ \phi, \mathrm{SIN}\ \phi] = (1,\phi)$$

Consider the projection of f[x,y] along lines parallel to the y-axis:

1798

Rochester Institute of Technology
Center for Imaging Science

A MODEL OF INCOMPLETE CHROMATIC ADAPTATION FOR CALCULATING CORRESPONDING COLORS

FINAL REPORT #RIT/DIRS 89/90-64-132

JANUARY 1990

Prepared for

United States Department of Energy
Contract #DE-FG01-88DP 20153

Task 6

Prepared by

Mark D. Fairchild

Chester F. Carlson Building, P.O. Box 9887, Rochester, NY 14623-0887

1.0 Summary

A new mathematical model of chromatic adaptation for calculating corresponding colors across changes in illumination is formulated and tested. This model consists of a modified von Kries transform that accounts for incomplete levels of adaptation. The model predicts that adaptation will be less complete as the saturation of the adapting stimulus increases and more complete as the luminance of the adapting stimulus increases. The model is tested with experimental results from two different studies and found to be significantly better at predicting corresponding colors than other proposed models. This model represents a first step toward the specification of color appearance across varying conditions.

APPENDIX 3

FISCAL YEAR 1990

HOUSE ENERGY AND WATER DEVELOPMENT

REPORT LANGUAGE

This new account proposed by the Administration funds activities historically funded in the Departmental Administration account and in the Energy Supply, Research and Development account. The Administration has proposed to establish the Isotope Production and Distribution Fund in order to bring together the various funding for isotope production into a single account. It is proposed that this appropriation treatment will improve the management of the activity and contribute to a more business-like approach.

The Committee shares the concern of the Administration that the management of this activity has not been satisfactory. The Department produces isotopes that are key to a number of U.S. industries including the multimillion dollar nuclear medicine industry.

Until recently the Department had not established the responsibility for the management of this effort. The production of isotopes was managed by four Headquarters and seven field office organizations. The operation was basically not managed by any organization but rather a minor portion of various organization responsibilities.

As a result of expressed Committee concerns, the Department established an organization to manage and direct the isotope production and distribution enterprize under the Assistant Secretary of Energy for Nuclear Energy. The Committee continues to urge the Department to assure sufficient management attention is devoted to this important responsibility.

Within 90 days of enactment of this Act, the Department of Energy should report to the Committees on Appropriations. The report should include the Department's policy with regard to production and sales of isotopes; the condition of the production facilities and plans for replacement of aging facilities; the expected requirements with regard to environmental and waste treatment efforts; and the details of the financial plans for full-cost recovery of the isotope production and distribution.

ATOMIC ENERGY DEFENSE ACTIVITIES

Appropriation, 1989	$8,100,000,000
Budget Estimate, 1990	9,387,000,000
Recommended, 1990	9,722,000,000
Comparison:	
Appropriation, 1989	+1,622,000,000
Budget Estimate, 1990	+335,000,000

OPERATING EXPENSES

Appropriation, 1989	$6,695,925,000
Budget Estimate, 1990	7,588,487,000
Recommended, 1990	7,923,487,000
Comparison:	
Appropriation, 1989	+1,227,562,000
Budget Estimate, 1990	+335,000,000

PLANT AND CAPITAL EQUIPMENT

Appropriation, 1989	$1,404,075,000
Budget Estimate, 1990	1,798,513,000
Recommended, 1990	1,798,513,000
Comparison:	
Appropriation, 1989	+394,438,000
Budget Estimate, 1990	————

The appropriation recommended for Atomic Energy Defense Activities provides for six principal programs: Weapons Activities; Materials Production; Defense Waste and Environmental Restoration; New Production Reactors; Naval Reactors Development; and Other National Security Programs.

WEAPONS ACTIVITIES

This program provides for the research, development, engineering, testing, and production of all U.S. nuclear weapons; maintenance of reliable weapons for their stockpile life; and retirement and disposal of nuclear weapons from the stockpile. Corollary activities include directing, planning, and coordinating research and development programs to advance weapons-related technologies which include nuclear directed energy weapons and inertial confinement fusion.

The fiscal year 1990 recommendation will continue efforts to provide new technology to maintain a modern nuclear force, along with the design and production of new weapons systems in response to defense requirements. The recommendation includes $168,940,000 for Inertial Confinement Fusion (ICF) and $266,105,000 for the Nuclear Directed Energy Weapons program which are the budgeted amounts.

The Committee recommendations for Weapons Activities totals $4,637,909,000 of which $3,820,270,000 is for Operating Expenses and $817,639,000 is for Plant and Capital Equipment. This equals the budget request and reflects an increase of $403,468,000 compared to fiscal year 1989 appropriations.

Weapons Activities are comprised of the following subcategories: Research and Development, Testing Activities, Production and Surveillance, and Program Direction.

RESEARCH AND DEVELOPMENT

The Committee recommendation for Research and Development totals $1,383,845,000 which is the budget request and reflects an increase of $63,366,000 from fiscal year 1989.

Included in the Committee recommendation is $1,620,000 for research in microelectronics engineering and imaging sciences at the Rochester Institute of Technology. These funds are included for research work that would be directly applicable to the Department's defense activities. The Committee expects the Department to proceed with negotiations with the Rochester Institute of Technology to develop a meaningful scope of work.

TESTING

The Committee recommendation for Testing Activities totals $599,955,000 which is the budget request and is an increase of $14,621,000 compared to fiscal year 1989.

APPENDIX 4

FISCAL YEAR 1990

HOUSE-SENATE CONFERENCE COMMITTE ON ENERGY AND WATER DEVELOPMENT

REPORT LANGUAGE

101st Congress
1st Session

HOUSE OF REPRESENTATIVES

Report
101-235

MAKING APPROPRIATIONS FOR ENERGY AND WATER DEVELOPMENT FOR THE FISCAL YEAR ENDING SEPTEMBER 30, 1990, AND FOR OTHER PURPOSES

September 7, 1989.—Ordered to be printed

Mr. Bevill, from the committee of conference,
submitted the following

CONFERENCE REPORT

[To accompany H.R. 2696]

The Committee of Conference on the disagreeing votes of the two Houses on the amendments of the Senate to the bill (H.R. 2696) making appropriations for energy and water development for the fiscal year ending September 30, 1990, and for other purposes, having met, after full and free conference, have agreed to recommend and do recommend to their respective Houses as follows:

That the Senate recede from its amendments numbered 4, 16, 20, 26, 32, 33, 51, 58, 61, 62, 68, 69, and 71.

That the House recede from its disagreement to the amendments of the Senate numbered 1, 5, 6, 21, 27, 29, 30, 34, 43, 45, 46, 48, 49, 54, 63, 65, 66, and 67, and agree to the same.

Amendment numbered 3:

That the House recede from its disagreement to the amendment of the Senate numbered 3, and agree to the same with an amendment, as follows:

Restore the matter stricken amended to read as follows: *Provided further, That $50,000 of the funds herein appropriated shall be used by the Secretary of the Army, acting through the Chief of Engineers, to initiate and complete a reconnaissance phase study of roadway access problems at Fishtrap Lake, Kentucky, and the purchase of property from willing sellers and relocation of owners of property so purchased: Provided further, That with funds appropriated in the Energy and Water Development Appropriations Act, 1989, Public Law 100-371, the Secretary of the Army, acting through the Chief of Engineers, is directed to initiate preconstruction engineering and design for construction of a bridge at Floyd's Fork, on Routt Road at Taylorsville Lake, Kentucky: Provided further, That the Secre-*

ant to the Act: Provided further, That not more than $5,000,000, may be provided to affected local governments, as defined in the Act, to conduct appropriate activities pursuant to the Act: Provided further, That none of the funds herein appropriated may be used directly or indirectly to influence legislative action on any matter pending before Congress or a State legislature or for any lobbying activity as provided in 18 U.S.C. 1913: Provided further, That of the amount appropriated herein, up to $10,000,000 shall be made available to the University of Nevada, Las Vegas (UNLV), to provide computing resource to the State of Nevada to carry out its independent analyses and oversight responsibilities under the Nuclear Waste Policy Act of 1982 and for use by UNLV. The funds shall be made available by direct payment to UNLV in the amount of the purchase price of a supercomputer or coupled minisupercomputers. UNLV shall take title to and assume ownership of the computer hardware and software that are purchased with these funds.

The managers on the part of the Senate will move to concur in the amendment of the House to the amendment of the Senate.

This amendment appropriates $346,000,000 instead of $424,700,000 as proposed by the House and $350,000,000 as proposed by the Senate. In addition, the amendment provides certain direction with regard to the implementation of the Nuclear Waste Disposal Fund.

ATOMIC ENERGY DEFENSE ACTIVITIES

Amendment No. 57: Appropriates $9,656,034,000 for Atomic Energy Defense Activities instead of $9,692,300,000 as proposed by the House and $9,554,098,000 as proposed by the Senate.

The conferees agree that accomplishing R&D in the weapons program outside the National Laboratories creates problems because of the highly classified nature of the program. The conferees understand that the Rochester Institute of Technology is a high caliber institution conducting work in microelectronic engineering and imaging sciences. The Department is urged to consider use of this facility in accomplishing this type of work in the weapons program.

The conferees agree to defer without prejudice initial funding of an upgrade to the Omega Laser at the University of Rochester. The conferees agree that improvements to major fusion facilities should be postponed until the results of the previously directed independent review of the Inertial Confinement Fusion program is completed.

The conferees agree that no funding is included for phase I transportation improvements at Lawrence Livermore National Laboratory and Sandia-Livermore Laboratory.

Amendment No. 58: Deletes language proposed by the Senate regarding the amount of funding for environmental restoration and waste operation. These allocations are addressed in the summary table at the end of this title.

DEPARTMENTAL ADMINISTRATION

Amendment No. 59: Appropriates $355,056,000 for Departmental Administration expenses instead of $358,734,000 as proposed by the House and $354,297,000 as proposed by the Senate.

APPENDIX 5

FISCAL YEAR 1990

COLLOQUY BETWEEN CHAIRMAN AND RANKING MINORITY MEMBER OF ENERGY AND WATER DEVELOPMENT AND REPRESENTATIVE FRANK HORTON

Proceedings of September 11, 1989, Issue No. 114; and September 12, 1989, Issue No. 115, Are Combined in This Issue.

Vol. 135 WASHINGTON, TUESDAY, SEPTEMBER 12, 1989 No. 115

Congressional Record

United States
of America

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So I say to you today that I am proud of what the committee has done here. In some instances they did not get everything they would like, and there may be some things all of us would differ with, but I want to commend every member of this subcommittee for the efforts they make and to say I am proud to be a part of this.

You have heard me say this before. We had better look after our own country. I believe in a balanced budget, but we ought to be careful where we balance it.

Some years ago I heard a fellow say that Ethiopia is the only country in the world that had a balanced budget. It did not owe a dollar and did not have one, either.

So we have got to see that this country continues to run. We need to look after our highways and bridges and dams. We had better get busy on that.

So within the limits of the possible, this committee has done the very best that anybody could do, and I am glad to say that we were united on it. It may be that something will come along in supplementals that we overlooked, but we are doing a good job.

The problems that we have that are financial are not from what we spent on our own country. We had better look after our own country first, because that is what all the rest depends on.

Mr. Speaker, again I commend the members of this committee and I am proud to be a member of it, along with the gentleman from Alabama [Mr. BEVILL] and the gentleman from Indiana [Mr. MYERS] and all of them.

I will tell you this, too. We have one of the finest staffs around. I could spend an hour talking about what a fine staff we have on the Appropriations Committee. They are all budget people. They know what they are doing. They are not politicians as such, but they do believe in policy and in sound business.

May I say again, we worked across the board. It is a bipartisan committee.

As you know, I represent my State on the Appropriations Committee, where I have served longer than any other Member. There are many provisions which are of interest and of real value to my State as shown in the report.

I am glad to say as chairman of the Committee on Appropriations, the same is true of all sections of the United States, Appalachia, where corridor V is contained, TVA; demonstration projects on watershed protection and flood control in the foothill area from Tennessee to Grenada; on the eastern section of my district, the Tombigbee Water Management District, Town Creek, in much of which the Soil Conservation Service is a partner.

This is of special interest to the people of my district. The same goes for projects in the rest of my State and the region.

Mr. Speaker, I take this opportunity to point out how much Federal programs mean to our Nation. This is one place where the benefits are not only essential for the moment, but also add to our national wealth for many years to come.

As I have pointed out many times, since 1941 the national wealth has increased 36 times.

Mr. Speaker, I have pointed out for some years, I believe it was first during the term of President Johnson, that hopefully when we slow down the growth of military expenditures, we can divert our energy, and attention to worthwhile, valuable and essential public works. We must keep the wheels turning for you cannot repay a cheap dollar borrowed with a hard-to-get earned dollar; thus we must have a vital economy.

We have tried through the years to get an authorization for the backlog of worthwhile projects, so we could begin to spend money wisely and now the time may have come so that we must do it. I think our committee and all our colleagues have done a great job in providing authorizations so that we will have some place to focus our resources when the time comes.

I remember when the Mount St. Helens volcano eruption occurred, we brought out a supplemental bill and called the committee back together so our House colleagues could get on with the task of taking care of that area which suffered from the volcano, Mount St. Helens.

Whether it is in California, Maine, New York, or wherever it may be, this committee has looked without partisanship to taking care of flood control in all our country.

It is unreasonable to expect any section of the country to handle water from 41 percent of the United States by itself—from parts of Canada and New York State—the water goes down the Mississippi to New Orleans.

Let me tell you that in 1928 in the lower Mississippi, we had one of the most disastrous floods in the history of the United States. Following that, the Congress had the Corps of Engineers prepare a plan to try to handle the flooding along the Mississippi River because at that time you could not control the volume of water draining 41 percent of the Nation. You have to work with it.

Now we have gotten control of the main stem to a great degree, but when the main stem drains all the water from 41 percent of this country into our area, then the tributaries have to go into a flooded river which means wide spread flooding over several States.

I want to tell you, the damages we have in my area which is in the tributary area, we had three 100-year floods in 10 years. Millions of acres were flooded including this year. I have been advised that 70,000 acres will continue flooded until next June.

So I say while we are starting out on new things, we have to live with all the water from 41 percent of the country, for it goes down into this funnel that hits New Orleans.

Let me digress a little bit here, and I think it is worthwhile to say it. Some years ago, I was walking over from the other body where we had been in a conference, and the late Secretary of the Treasury, Joe Fowler, who was Chairman of the Commission which was to build up a sufficient productive capacity for us to compete with Russia, said, "Jamie, you know, if I was in charge of Russia, I would declare 5 years of peace."

Just think, he said:

> It would bring disaster to our economy. Just think if all the boys were to come home from the service, if all the contracts with the Federal Government for military equipment were canceled, what would happen here. Our economy would break down. At that time we had more cars than we could park, more clothes than we could wear, and the finest time in the history of this country. But I decided that it simply could not take a war or preparation for war in order to have prosperity. We could have prosperity if we would use the same energy in protecting and developing our country, and would end up with a rich country.

I want to congratulate my fellow colleague on this bill. They have provided something for us to turn to so we may improve our country, and if we will just do that, we can do wonders.

(Mr. WHITTEN asked and was given permission to revise and extend his remarks.)

Mr. MYERS of Indiana. Mr. Speaker, I thank our chairman for those very kind remarks, and also I thank the gentlewoman from Nebraska [Mrs. SMITH] for her kind remarks.

Mr. Speaker, I yield 2 minutes to the gentleman from New York [Mr. HORTON].

Mr. HORTON. Mr. Speaker, I thank the gentleman for yielding me this time. I would like to engage the chairman and the ranking minority member in a colloquy on the Rochester Institute of Technology research funding on microelectronics and imaging sciences.

Mr. Speaker, the Rochester Institute of Technology has been engaged in an effective program of microelectronics and imaging sciences research with the Department of Energy over the past year. The House Subcommittee on Energy and Water Development has found this institution to be highly capable in these fields and an asset to the work of the Department of Energy's weapons research activities.

Officials at RIT have agreed to allay concerns of conference committee members by pursuing a program to protect any and all sensitive information relating to weapons research at the Rochester Institute of Technology.

□ 1610

Given this, would the chairman agree that the House conferees would encourage the Department of Energy to make available appropriate funding for continued microelectronics and imaging sciences research being conducted at the university?

I yield to the chairman for the purposes of answering this question.

Mr. BEVILL. I would say to my friend from New York that I agree.

Mr. HORTON. Mr. Speaker, I thank the gentleman. I would also ask the ranking minority member if he would comment.

Mr. MYERS of Indiana. Mr. Speaker, will the gentleman yield?

Mr. HORTON. I am happy to yield to the gentleman from Indiana.

Mr. MYERS of Indiana. Mr. Speaker, I would like to join the chairman in assuring the distinguished gentleman from New York that it is the intention of the House conferees to encourage the Department to continue the excellent working relationship it has developed with the Rochester Institute of Technology in microelectronics and imaging sciences research.

Mr. HORTON. Mr. Speaker, I thank the chairman and the ranking minority member. I rise also in support of this legislation, and urge its approval.

Mr. BEVILL. Mr. Speaker, I yield 30 seconds to the gentleman from Illinois [Mr. YATES], a distinguished member of the Committee on Appropriations.

Mr. YATES. Mr. Speaker, I want to thank the gentleman from Alabama [Mr. BEVILL], the chairman of the subcommittee, and the gentleman from Indiana [Mr. MYERS], the ranking member, for having accepted in the appropriations bill a million and a half dollars for the O'Hare amendment and $750,000 for the McCook and Thornton amendments. Accepting these amendments means a great deal to the people of Chicago in dealing with the flood-control program which has concerned the city and the north suburbs of the city for many, many years, and this will go a long way in helping deal with that problem.

I thank the gentlemen very much for what they did.

Mr. MYERS of Indiana. Mr. Speaker, I thank the gentleman for his comments. If the gentleman figures out how to handle the snow now, we will take that on next. We have taken care of the floods, and if we can take care of the snow now, I can get out of Chicago.

Mr. Speaker, I yield 2 minutes to the gentleman from Nebraska [Mr. BEREUTER].

Mr. BEREUTER. Mr. Speaker, I certainly support the conference report and wou[illegible]o enter into a colloquy with t[illegible]stinguished chairman of the a[illegible]iations subcommittee on Energ[illegible] Water Development, Mr. BEVI[illegible]nd the ranking minority member of the subcommittee, the distinguished gentleman from Indiana [Mr. MYERS] on the Missouri River Mitigation Program. I thank the gentlelady from Nebraska [Mrs. SMITH for her special help, and all of the members of the subcommittee. I thank them for their effort and assistance.

I am grateful that the conference agreement on H.R. 2696 includes an appropriation of $300,000 for the Army Corps of Engineers to conduct activities for the four-State Missouri River Mitigation Program as authorized in section 601 of Public Law 99-662.

Is it the understanding of the distinguished members of the committee that these funds, appropriated under "planning" in the "general investigations" account, will be obligated by the Corps of Engineers for planning and/or designing of this project? I yield to the chairman.

Mr. BEVILL. The gentleman is correct.

Mr. BEREUTER. Mr. Speaker, I thank the chairman. I yield to the distinguished ranking member for the same question.

Mr. MYERS of Indiana. In response, yes, the conference did consider this and discuss this, and is the agreement and understanding of the conference.

Mr. BEREUTER. Is it also the understanding of the gentleman that obligation of these funds in such a manner by November 17, 1991, is sufficient to prevent deauthorization of the project as required in section 1001(a) of Public Law 99-662? I yield to the chairman for that question.

Mr. BEVILL. The gentleman is correct.

Mr. BEREUTER. I yield to the ranking member for that question.

Mr. MYERS of Indiana. The colleague of the gentleman, the gentlewoman from Nebraska [Mrs. SMITH], brought this to our attention in the conference. This is correct.

Mr. BEREUTER. I thank the chairman and ranking member for this clarification and reassurance.

Mr. BEVILL. Mr. Speaker, I yield 1 minute to the gentleman from Texas [Mr. CHAPMAN], a distinguished member of this subcommittee.

Mr. CHAPMAN. Mr. Speaker, I thank the chairman for yielding.

Mr. Speaker, I rise in support of the conference report and would ask the chairman one question: The House report includes language providing for western access at the Cooper Lake and Channels project. Referring to the statement of the managers on page 5 of the conference report which states that the House report language not change what the Senate has accepted by the conference. Am I correct in assuming that the report language on western access included in the House report was accepted by the committee of conference?

Mr. BEVILL. Mr. Speaker, will the gentleman yield?

Mr. CHAPMAN. I am happy to yield to the gentleman from Alabama.

Mr. BEVILL. Mr. Speaker, yes, the gentleman from Texas is correct. The west-end access report language w accepted by the conference committ

Mr. CHAPMAN. Mr. Speaker, thank the distinguished chairman, a I urge adoption of the conferen report.

Mr. MYERS of Indiana. Mr. Spea er, I yield 1 minute to the gentlem from Utah [Mr. NIELSON].

Mr. NIELSON of Utah. Mr. Speake I would like to commend the chairma of the committee, the gentleman fro Alabama [Mr. BEVILL], and the ran ing member, the gentleman from Ind ana [Mr. MYERS] for their diliger work on this appropriation bill, H.R 2696. As usual, they are the first an best in the appropriation process, an I appreciate that very much.

Mr. Speaker, I appreciate particularly their looking after the central Utah project and treating us so well there. I would like to suggest to the gentleman from California [Mr. MILLER], who spoke earlier about his concern about the $15 million added in the Senate, that money has to go only for improvements in the water irrigation system and cannot be distributed to the membership at large. I will make sure that they handle that money correctly. I do appreciate his indulgence in that particular regard, and I commend him for his work as well.

Mr. BEVILL. Mr. Speaker, I yield 1 minute to the distinguished gentleman from Illinois [Mr. POSHARD].

Mr. POSHARD. Mr. Speaker, on behalf of the people of southern Illinois, and especially Monroe County, I would like to state my strong support of H.R. 2696.

Besides all of the good work it does elsewhere, it helps the people in and around Harrisonville, IL, escape from the very real threat of a devastating flood. This bill will dramatically improve the quality of life for a thousand or more people and save valuable farmland from ruin.

I want to thank Mr. TOM BEVILL, the chairman of the Energy and Water Development Subcommittee, and his outstanding staff, and the committee chairman, Mr. JAMIE WHITTEN, for standing with the residents of southern Illinois in their time of need.

Government should help people who want to help themselves. The people in Monroe County need our help to keep the flood waters away from their doorsteps, so they can improve the quality of their lives and their childrens' lives.

Mr. MYERS of Indiana. Mr. Speaker, I yield 2 minutes to the gentleman from Wisconsin [Mr. GUNDERSON].

(Mr. GUNDERSON asked and was given permission to revise and extend his remarks.)

Mr. GUNDERSON. Mr. Speaker, I rise with mixed reactions here today.

Looking at this conference report on the one hand, I want to commend the actions of our distinguished ranking member and the chairman. Frankly, this is a classic example of the House

APPENDIX 6

DEPARTMENT OF ENERGY - ROCHESTER INSTITUTE OF TECHNOLOGY COOPERATIVE RESEARCH GRANT PROGRAM

FISCAL YEAR 1990
PROPOSED PROGRAM OF ACTIVITIES

MICROELECTRONIC ENGINEERING

RESEARCH DIRECTIONS IN LITHOGRAPHY: ADDRESSING THE DEPARTMENT OF ENERGY'S ATOMIC WEAPONS RESEARCH MISSION

FISCAL YEAR 1990
PROPOSED PROGRAM OF ACTIVITIES

Rochester Institute of Technology (RIT) has been deeply involved in applied research in lithography for the manufacture of integrated circuits for the past 10 years. RIT has obtained an international reputation for its educational programs in microelectronic engineering. The United States' only ABED accredited undergraduate program in Microelectronic Engineering now has 300 undergraduate students. The new Master of Engineering in Microelectronics Manufacturing has also been very successful and will have 20 full time students in the Fall of 1989. These ambitious educational programs are paralleled by the development of a semiconductor fabrication facility that is unequaled at any single university in the United States and the development of an applied research capability that in its infancy shows promise of a national caliber research contribution in the area of lithography for microelectronics and micromechanical devices.

RIT microelectronic engineering researchers have worked cooperatively with DOE scientists to design a program of research activities which will address general and specific goals of the DOE atomic weapons research program in microelectronics. The following FY 1990 proposed program of activities represents a continuation and expansion of previous activities and results.

General Research Directions

The microelectronic engineering program at RIT has identified several areas in which it will develop as primary research objectives. These are:

- **Lithography**
    - Electron Beam Maskmaking
    - Submicron Electron Beam Imaging
    - Resist Material Evaluation
    - Direct Write on Wafer
    - X-ray Maskmaking
- **Manufacturing of Silicon Integrated Circuits**
    - Process Development - CVD, Plasma Etching
    - Process Integration - Advanced NMOS, CMOS and Bipolar processes, mixed analog and digital
    - Robotics, automation, work-in-progress tracking, scheduling
    - Manufacture of Application Specific Integrated Circuits
- **Integrated Micromechanical Devices and Sensors**
    - Integrated Chemical Sensors
    - Mechanical Sensors

These areas will be augmented by work in electro-optic devices, photonics and G&As integrated circuits. However, these efforts need to be restrained to prevent distraction from the three main areas listed above.

Within the area of lithography there are many areas that we will be working in. All of these areas are interrelated as well as related to the other two areas of focus. For example, the area of resist material evaluation and modeling applies to areas of electron beam lithography, deep UV lithography, Submicron imaging, etc. and must be understood to develop new lift-off processes for manufacture of silicon sensors.

Research Directions in Lithography

Electron Beam Maskmaking

Electron beam lithography is the pivotal technology for all types of lithography. Optical lithography (Deep UV) will use photomasks on quartz made by e-beam technology. E-beam direct write on wafer is obviously dependent on development in e-beam lithography. X-ray lithography will use masks made by e-beam lithography.

ASIC Capability

One of the main areas for the application of electron beam maskmaking is in making masks for ULSI application specific integrated circuits. The details of networking, transcription and pattern verification need to be mastered. Currently there are still a lot of developments in this area that need to be addressed if fast turn around, working aSIC devices are to be realized.

Submicron Electron Beam Imaging

The investigation of submicron e-beam imaging will involve the study of scattering and proximity effects. Low energy electron dose, thin resist coatings and organic resists may be best suited for this application. Plasma etching of chrome may be required to transfer the patterns.

Resist Material Evaluation

The evaluation and modeling of resist materials is especially important as the lithographic dimensions go submicron. Resist materials are characterized by their sensitivity, contrast and performance. Using RIT's Perkin Elmer Development Rate Monitor these parameters can be obtained for the new resist materials now becoming available. We propose to evaluate the following materials and processes:

- Deep UV Materials (Eximer Laser Exposure 248nm)
- Aqueous Contrast Enhancement Materials
- Solvent Based Electron Beam Materials
- Aqueous Based Electron Beam Materials

- Reversal Process
- Lift Off Process

Direct Write on Wafer

Direct write on wafer will be investigated using RIT's MEBES electron beam tool. To do this a special wafer holder will be obtained. Alignment, metrology, topology and feature related scattering will be investigated.

X-Ray Maskmaking

Soft x-ray masks can be made using layers of Boron Nitride or silicon or silicon carbide and absorber films such as gold imaged directly (similar to direct write on wafer) using RIT's MEBES capability. To do this work RIT will need to obtain a special substrate holder for these mask blanks for the MEBES system. Sputtering capability for boron nitride and gold will need to be developed. The evaluation of these masks will be done by developing contacts with industry. In Rochester we have Hampshire Instruments, Inc. a manufacturer of x-ray exposure systems. In nearby East Fishkill, New York, IBM has a new facility that will have x-ray exposure capability. Other alternatives are available as well.

SPECIFIC TASKS FOR OCTOBER 1, 1989 TO SEPTEMBER 30, 199 0

Task 1: Electron Beam Maskmaking

The MEBES system installation is nearly complete at this point. The class 10 clean room enclosure is essentially finished and the machine has been moved in. It will take until the beginning of summer to finish the installation of the motor-generator set and to qualify the room for temperature and class 10 certification. The MEBES itself will be brought up over the summer and will be writing masks before Fall of 1989. To complete the entire operation the chemical process for developing e-beam exposed photomasks needs to be brought up. This means that plate processing equipment needs to be obtained, installed and made operational and used. RIT has received one APT plate processing machine as a donation from Perkin Elmer. We have also received 120, 5" x 5" blank quartz photoblanks from Digital Equipment Corporation. These will be coated with chrome and then coated with the e-beam resist of choice. The chrome coating technology needs to be developed and may be done outside of

RIT, or by evaporation or by DC magnetron sputtering at RIT. (RIT has an old Balzars DC magnetron sputtering system that may be able to be repaired for this project) Spin coating technology for 5" x 5" quartz photoblanks needs to be developed. A spinner has been purchased for spin coating large substrates up to 5" by 5". This will be used for 5" wafers and photomasks. A Nanospec film thickness measurement system was donated by Nanometrics Inc. and will be used to evaluate coating thickness and uniformity before and after development. Soft bake of the e-beam resist will be done by a forced air convection oven or by hot plate. A Brewer Scientific Inc. hot plate has been purchased and will be used for investigating this type of soft bake. Finally chemical etching for image transfer to the chrome thin film needs to be optimized.

With hard work RIT should have all of the above goals obtained before October of 1989.

Task 1 - Part 1

Is basically to continue from this point to develop technology in the area of electron beam maskmaking. The techniques developed above will be further optimized by statistical design of experiments. The studies will be expanded to include a variety of electron beam resists. We are especially interested in aqueous based e-beam resist materials and will develop processes for these materials.

Task 1 - Part 2

We will develop the capability for producing photomasks to support the foundry operation at RIT. This will involve making photomasks for VLSI NMOS and CMOS application specific integrated circuits designed by foundry customers. The major additional accomplishment will be in the area of networking pattern verification, and mask inspection. Inspection equipment such as a KLA die to die and KLA die to data base equipment will be sought as a donation and funds for this task will be used for installation and maintenance.

Task 2: Submicron Electron Beam Imaging

In this area we will develop RIT's capability for modeling submicron lithography. RIT is working on transferring PROLITH, a lithography modeling program written by Dr. Chris A. Mack of the U.S. Department of Defense, to the DEC VAX environment. We are also working with Berkley SAMPLE and Perkin Elmer PROSIM software.

The only deliverable for this area for the 89-90 time frame will be the development of an eximer laser (248nm) exposure system for preparing samples for evaluating deep UV resists using the Perkin Elmer Development rate monitor. This will involve a laser, and an X-Y table controlled by a personal computer so that wafers can be exposed with stripes of different dose. We will use the results of this experiment to identify optimum exposure and develop conditions for this resist material. We will use the software mentioned above to predict submicron photoresist image profiles and compare these profiles to those obtained experimentally by contact or projection lithography using masks made by e-beam technology. (RIT does not have an eximer laser projection stepper but we may be able to have access to one for this experiment.)

Task 3: Resist Material Evaluation

We plan to use RIT's Perkin Elmer Development Rate Monitor for the evaluation of the e-beam resist materials and Deep UV resist materials as mentioned above. We also plan to evaluate conventional resist materials and advanced resist processes. The major exposure tool for this work will be RIT's GCA 4800 stepper. Processes that use Contrast Enhancement Materials, Lift-off, Dyes, and Reversal will be studies.

Task 4: Direct Write on Wafer

To do basic electron beam direct write on wafer at RIT we will need to obtain a special holder for wafers and address alignment and registration problems associated with using the MEBES I as the exposure tool. We will investigate these problems and make the necessary modifications during 89-90. The purchase of a whole wafer Scanning Electron Microscope is included as part of this task but will be useful for inspection of other tasks.

Task 5: X-Ray Maskmaking

To do basic x-ray maskmaking at RIT the capability for sputtering materials such as Boron Nitride and silicon carbide will need to be developed. RIT does not have RF sputtering capability. Part of the proposed budget will provide RF sputtering capability for this task. This capability will be combined with RIT's chemical vapor deposition capability and experience in etching of single crystal silicon to make photomasks with gold absorber, and membrane of boron nitride, silicon carbide or silicon.

IMAGING SCIENCES

RESEARCH DIRECTIONS IN IMAGING SCIENCES ADDRESSING THE DEPARTMENT OF ENERGY'S ATOMIC WEAPONS RESEARCH MISSION

FISCAL YEAR 1990
PROPOSED PROGRAM OF ACTIVITIES

Introduction

Imaging Science is becoming an increasingly powerful tool in many areas of science and technology. Advances in detector technology, microelectronics, materials science, and information processing have made it possible to utilize imaging and electro-optical approaches to address increasingly complex and often totally new problems. The tasks described below represent areas where imaging may make significant contributions to subject areas or mission objectives under the Department of Energy's charter and, specifically, to the Atomic Weapons Research Program.

Several of the tasks address issues related to components in the imaging chain needed for segmentation and classification of images for target detection. The increasingly complex problems associated with mobile missiles, counter measures and treaty verification require a more rigorous understanding of the end-to-end image chain for proper information extraction. Other tasks address issues associated with machine vision and imaging systems applicable to materials handling or inspection in an energy or materials production environment. Also included are some more fundamental imaging science or electro-optical tasks which would have broader application across many areas, including nuclear medicine, guidance and control, image processing and inspection.

Task 1: Thermal Infrared Image Generation and Signature Analysis

Task 1a: Evaluation of sensor-in-the-loop IR scene simulation approaches

In order to effectively evaluate end-to-end characteristics of IR sensor systems, it is necessary to image scenes with the radiation characteristics of the real world. One way to do this is to actually fly the system. However, modern IR systems typically include automatic target recognition systems that are impacted by season, time of day, scenario, and atmospheric effects making flight testing against all possible scenarios too costly. Thus, self-radiant scene simulation becomes a necessary alternative. These simulators are designed to generate scenes at a rate compatible with the imagers real-time acquisition rates and to mimic spatially and spectrally the radiant signal a sensor would see in flight, thus providing a potential for end-to-end sensor evaluation.

A baseline system has been assembled using an extended laser light source, a spatial light modulator (which forms the image), a visible to infrared transducer (which converts the laser modulated visible image to a longwave infrared self-radiant image) and a thermal infrared imaging sensor. The ongoing effort is aimed at evaluation of the radiometric, temporal and spatial characteristics of the system and, therefore, the types of sensor for which this approach would be applicable. Future efforts would concentrate on development of improvements to the system, as well as consideration of alternative components or approaches to obtain improved system performance. Particular emphasis will be placed on efforts aimed at generation of larger (i.e more pixels) higher resolution systems capable of simulating images for higher resolution and wider field-of-view sensors. Efforts under this task will also be directed at generation of improved scene generation approaches to better simulate real-world scenes.

Task 1b: Thermal infrared signature assessment

Thermal infrared imaging systems are extremely attractive for target location because of their day-night capabilities. However, they are extremely complicated images in terms of predicting signatures because the image is a function of solar loadings, thermodynamic and optical properties of the target and backgrounds, atmospheric conditions, and sensor characteristics. As a result, automatic scene segmentation is extremely difficult because of dramatic changes in the appearance of the same object under different imaging conditions. To overcome these limitations, algorithms and processors are being developed that incorporate thermodynamic and atmospheric models, as well as the optical properties of materials. The aim of this approach is to have algorithms that will adapt to the taking conditions such that the radiance level and contrast of scene elements can be anticipated. This effort will be directed at evaluation and refinement of some of the models used in developing these algorithms. In particular, models for prediction of atmospheric effects will be compared against empirical measurements of atmospheric effects. This will include flight tests with IR imagers to test the techniques. Also included under this effort will be evaluation of the utility of thermodynamic models in predicting the radiance field propagated toward the sensor. These models coupled with the atmospheric models, provide information on the error bounds which can be tolerated by the scene segmentation and classification algorithms.

Task 1c: Infrared multispectral signature assessment

Multispectral image analysis techniques have proven extremely powerful for image segmentation and classification in the visible and near-infrared spectral regions. Recent advances in sensor technology have made it possible to consider multispectral image acquisition and analysis within the thermal infrared windows. This means that multispectral sensing could be performed day and night. To date, only very restricted data bases exist on the spectral signatures and signature extraction techniques applicable in the thermal infrared windows. This task will involve laboratory studies of the spectral signatures in the thermal infrared windows, as well as an investigation of spectral analysis techniques applicable to thermal infrared multispectral images. These analyses will concentrate on images acquired of the Stockbridge, New York test range with a thermal infrared multispectral scanner. It is expected that by combining thermal and spectral data more accurate segmentation and material identification algorithms can be developed.

Task 2: Use of a Frequency Modulated Pulse to Characterize Random Scattering Medium

Wave propagation through random media is a general branch of science that has applications in many different fields. Acoustic propagation in the ocean is an example where the randomness of the medium originates from the fluctuations in velocity of sound propagation. Ultrasonic imaging in medicine is another example where the random medium is the inhomogeneous tissue structure (random variations of compressibility). When such a medium, for the purpose of imaging, is probed by a short pulse of sound wave, the resulting backscattered or reflected signal carries a signature of the fluctuations or random structure of the medium. These fluctuations can be used to infer statistical and physical characteristics of different media. However, the statistics of fluctuations also depend on the resolution capability of the probe or the imaging system. Ability to change the resolution cell volume may provide an additional flexibility in the characterization of the random medium.

This task proposes the use of an ultrasonic frequency modulated pulse for characterization of random media. The use of such a pulse gives the ability to change the resolution cell volume in various ways. The experimental technique for imaging resolution objects has already been developed. This new effort will allow these concepts to be applied to the problem of characterization of random media and will serve as a model study in answering basic questions.

The main objectives of the experimental and theoretical work are to:

- Through the use of first order and second order fluctuation statistics to characterized the random media.
- Evaluate the usefulness of frequency modulated pulse in changing the resolution cell volume and its effected on statistics of fluctuations.
- Evaluate the usefulness of morphological image texture characterization in classifying the structure of the random medium.

Significance

Characterization and classification of seabeds by SONAR is important from the point of view of energy resource development. If the scattering structure of the beds is below the resolution capability of the imaging system, the received signal is a quasi-harmonic stochastic function of time. The problem of analyzing the statistical nature of this signal and using it to characterize the seabeds falls squarely within the domain of the work proposed here. The signal processing techniques developed can be extended to SONAR or SEISMIC exploration data analysis.

The wave nature of the energy used in imaging is fundamental to any imaging task at hand, whether it be RADAR, SONAR or INFRARED detection for military purposes or ultrasonic imaging in a laboratory setup for experimental convenience, its relevance should be viewed in the above-mentioned context.

Task 3: Adaptive Techniques for Real-time Vision Systems

Vision systems provide sensory input for automatic systems, such as those which may be used in hostile or remote environments, a typical example of which may be nuclear reactors for energy production.

The basic elements of a vision system are sensors, information processors, and control systems. The performance of current systems is inadequate because of shortcomings in all these critical elements. Sensors require feedback control to extend their dynamic range and adapt to changes in environmental and imaging parameters. More sophisticated information processing is needed to recognize objects and hazards in the operating environment. System control is needed to carry out fusion of sensor information, planning of actions, and accomplishment of tasks.

Limitations in sensors are observed as inability to react to rapid changes in illumination intensity and other imaging parameters. Information processing and control use low-level algorithms but do not exploit the capabilities of artificial intelligence.

Task 3a: Real-time adaptive control systems

We propose the development of real-time adaptive algorithms to sense changes in environmental and imaging conditions. These algorithms will provide the basis for feedback control systems which will automatically adapt the vision system and ensure the system performance is optimized. The initialization and real-time calibration of the vision systems will employ artificial intelligence in the adaptive algorithms.

The prototype adaptive algorithms developed in Task 3a will be enhanced and optimized by employing artificial intelligence techniques to create high-level image processing algorithms.

Task 3b: Artificial intelligence image workstation

Vision systems must have the ability to recognize objects. Current systems make use of pattern matching but do not achieve object recognition or any level of understanding of the image input. This is similar to the state that speech understanding was in until object-oriented computer systems were developed to assist research programs. We propose developing an image understanding workstations that will enable the development of high-level image processing algorithms and parallel architectures for real-time machine vision. The system will support incremental prototyping and extensive code re-use to improve software productivity.

To image radioactive objects, normal imaging elements (e.g. lenses) are impractical. Coded apertures are often used but suffer from the fact that the optimum code differs in different objects. To improve the quality of images for a machine vision system, it is necessary to adapt the code to the object field.

Task 3c: Adaptive sensors for image acquisition

As the imaging architecture changes the image reconstructive algorithms must be adapted as well. Reconstruction algorithms will be investigated, along with feedback systems to control and optimize the imaging parameters.

Task 4: Polarization Preservating Ring-Resonators for Optical Computing, Inertia Navigation and Oil Drilling

This task will investigate the potential of polarization-preserving fiber ring resonators for:

- Compact, medium-accuracy gyroscopes (short flight inertial navigations, oil exploration)
- Optical signal processing/communications (dual notch/comb filters, recirculating delay lines, and novel response characteristics).

Filter optic gyroscopes for inertial navigation are reaching maturity. The most successful gyro type for precise navigation is the passive long-length Sagnac. However, short flight, medium accuracy applications may well be satisfied by passive ring resonator structures. Successful operation of passive resonator fiber gyros has been recently demonstrated in the literature. The advantage of the resonator lies in the fact that it uses only a few meters (or tens of meters) of fiber, compared to hundreds (or thousands) of meters for the Sagnac interferometer. The cost of polarization-preserving fiber is several dollars per meter, therefore substantial cost savings can result. Furthermore, wrapping only a small length of fiber around a former in a bifilar winding (required for thermal compensation) is far easier than wrapping a thousand meters. This practical consideration is not mentioned in the literature, but experience has shown it to be the most critical aspect of making a fiber gyro. Another advantage is that miniaturization is easier with a short length of fiber, since it can be wrapped around a small former. This offers a potential use in oil drilling applications. For optical computing applications, ring resonators offer unique possibilities; they do not compete with other technologies. Polarization preserving resonators offer the potential of double information capacity and novel polarization-multiplexed configurations.

Preservation of the input state of polarization is necessary for all of the above cases. However, because polarization preserving couplers have not been widely available, most studies to date have used ordinary single mode fiber with additional polarization controllers, which add bulk and complication. This effort will undertake a thorough analysis (theoretical and experimental) of the potential of polarization preserving fiber and couplers for the above-mentioned applications.

Task 5: Image Processing

Task 5a: A high-speed hybrid image processing system incorporating coordinate transformations

A hybrid optical-electronic-acoustic system is proposed to implement the linear image processing algorithms in near-real-time (i.e. at video rates). The processing algorithms to be implemented include fourier transformation, adaptive image filtering, image spectrum estimation, and image cepstrum analysis. The system will have applications in processing imagery obtained remotely in a hostile environment, e.g. in regions of intense radiation and in "real-time" processing of coded-aperture imagery in nuclear medicine and in filtering speckle from coherent imagery (i.e. in diagnostic medical ultrasound). An optical scanner converts 2-D images to 1-D signals which are processed by 1-D signal processing devices (e.g. surface-acoustic-wave or charge-coupled--device filters). The processed images will be displayed by a hybrid electro-optical system.

Task 5b: Image segmentation and classification by local morphological size distributions

Targeting information can be extracted from an image by generating derived images which accentuate certain aspects relating to the target. Decisions can then be based upon analysis of the derived images.

Morphological granulometries give rise to size distributions containing textural information. The present investigation involves an adaptation of the method that is appropriate to segmentation and classification.

Rather than construct a single size distribution based on the entire image, local size distributions are computed over windows within the image. These local distributions lead to texture-based local statistics at pixels within the image. Segmentation techniques can be applied to the resulting moment images, the result being segmentation of the original image. By choosing various structuring-element sequences and moments, each pixel can be assigned a feature vector based upon local texture. Pixel classification results from comparing the feature vector with stored vectors from test images.

Task 6: Imaging Spectrometer for the Spectral and Spatial Characterization of Scenes

Currently, two distinct types of metrological devices are used to characterize the spatial and spectral properties of materials and scenes in the visible wavelength range. Spatial attributes are recorded using photographic or machine vision techniques. If they are multispectral, the bandwidths are quiet large in the neighborhood of 120nm. Spectral attributes are recorded using spectroradiometers or spectrophotometers. These devices are only capable of measuring homogeneous materials, usually in laboratory environments. In order to record both properties, extensive measurements and calibrations are required, particularly since many materials in real scenes have spectral properties which vary as a function of illuminating and viewing geometries.

It is proposed to design and build a laboratory machine vision system which captures and stores narrow-band spectral information within the visible region of the electromagnetic spectrum. The design approach is to optimize a monochrome machine vision system for photometric response, photometric linearity, dynamic range, and pixel independence. A monochromator will be designed to rotate in synchronization with frame rates enabling the capture of narrow-band image information.

This device will have significant application in target recognition and classification of materials in situ with the implementation of this technology to field instruments.

Mr. BEVILL. It will be available for the staff and committee Members.

Mr. ROSE. We are requesting today a proposal for fiscal year 1991 of $1,803,145. We appreciate your funding this research in the past. We would ask your continued support in the future.

Mr. BEVILL. We are delighted to have you with us, and we will work with Congressman Horton and do the best we can.

TUESDAY, APRIL 3, 1990.

SOLAR ENERGY RESEARCH INSTITUTE

WITNESS

HON. DAN SCHAEFER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF COLORADO

Mr. BEVILL. Congressman Schaefer.

Mr. SCHAEFER. I will be very brief, Mr. Chairman.

I know the committee's concerns. We are going into markup on the Clean Air Bill in about 10 minutes and we all know how important that is.

Mr. BEVILL. Let us coal miners survive, that is all we ask.

Mr. SCHAEFER. We are trying our best, Mr. Chairman, to get a good balanced bill out of it.

I just wanted to say a few words about the Solar Energy Research Institute which is in my district in Colorado, at least a great part of it. It has been located there for a long time. We are doing a tremendous amount of work out there on renewable types of energy resources for the future.

As we all know we are above 50 percent in oil importation. I think that this budget item has been on line for about 10 years and is due to get into the budget.

I know that the President's budget request is in for it and I would ask consideration of the committee to get this thing going and expand the research facilities we have there. We all know that petroleum reserves are low.

Oil and gas development is having a difficult time, not only in exploration, but in production. We have to look to the future, and on what will propel us into the next century as far as some type of strong energy policy.

I think this is an important aspect of it. I would ask the committee's full consideration.

I do have a gentleman here who would be willing to answer any questions, technical or not, Mrs. Boggs.

Mr. BEVILL. Let's put his name in the record to show that he is here.

Mr. SCHAEFER. Mr. Jim Williamson is here from Washington, D.C.

Mr. BEVILL. We are glad to have you here.

Mrs. BOGGS. Mr. Chairman, I just want to say that I had such a good visit to SERI, and I certainly back up the request of Mr. Schaefer.

Mr. **Schaefer**. I thank you very much, Congresswoman Boggs. I knew you were out there and we were trying to get as many people as possible out there to see exactly what we are doing and the progress we are making.

I appreciate the indulgence of the committee.

Mr. **Bevill**. And your statement will be put in the record.

[The statement of Hon. Dan Schaefer follows:]

TESTIMONY OF CONGRESSMAN DAN SCHAEFER

In Support of the Solar Energy Research Facility

**Before the Appropriations Subcommittee on
Energy and Water Development**

April 3, 1990

I would like to thank the members of the subcommittee for allowing me this time to testify. The main purpose of my presence here is to support the Administration's budget request for the Solar Energy Research Facility at the Solar Energy Research Institute in Golden, Colorado.

This facility has been a SERI budget item for the last ten years. For various reasons, it has never received funding, and the Institute has been forced to utilize less-than-ideal converted office space for its critical work in alternative energy sources research.

Currently, SERI faces large obstacles in the type and scope of cutting-edge research it can accomplish. The present facilities, while adequate, were never built for the type of activities SERI has been tasked to undertake.

SERI is not currently able to maximize research dollars due to the environmental and safety constraints of these present facilities. This is not to say that SERI has been unproductive: on the contrary, SERI has been a world leader in photovoltaics, biomass, and renewable fuels research and development.

It is clear that SERI would benefit greatly from the operational freedom that a new, specialized facility would bring. This freedom is crucial if we in the United States are to maintain our leadership position in renewable energies technology.

SERI's research has serious implications for the future of our nation. Through my work on the Energy and Commerce Committee I have seen the promise that renewable energy sources hold, and the immense problems our nation will face with a continued heavy reliance on fossil fuels. SERI's efforts now will lead us to the energy sources our nation, and our world will use in the future.

A new building is needed now to ensure that this research is being utilized efficiently and effectively, and will help assure the maximum possible output and productivity in our research programs. This will allow us to run farther and faster toward the goal of ensuring clean, renewable, and economically practical energy for our nation's future.

Mr. Chairman and fellow members, I urge you to maintain the Department of Energy's $4.5 million request for the Solar Energy Research Facility, and thank you for your time and consideration.

Mr. BEVILL. Very good. Our good friend and colleague, Martin Frost, has just come in.

Mr. FROST. I am going to wait for the others, Mr. Chairman.

Mr. BEVILL. Then we will hear from Mr. Patrick Long, chairman of KMS Fusion.

TUESDAY, APRIL 3, 1990.

ICF PROGRAM

WITNESS

PATRICK B. LONG, CHAIRMAN, KMS FUSION, INC.

Mr. LONG. Good morning, Mr. Chairman, Mrs. Boggs, I appreciate the opportunity to appear. I have submitted my written testimony for the record. I would just like to cover some of the highlights.

The National Academy of Sciences 1990 Interim Report on the DOE's Inertial Confinement Fusion Program has recently been published. Confidence in the ICF approach to fusion is higher than at any time in history. The fiscal year 1991 ICF budget should reflect, in my opinion, some of the recommendations that the NAS, specifically the scarce resources of the program, ought to be focused on.

The ICF Program's major tasks as stated by the NAS are physics experiments, target design, and development. The NAS report states that there are three critical requirements for a successful ICF Program; driver performance, capsule design, and capsule fabrication. KMS has been a pioneer in the field since 1970 and developed the Beta Layering Technique cited in the NAS report.

At this time KMS is changing its role in the program at the direction of the DOE to focus its resources on target fabrication and target development. As a consequence of this, we are going to see a substantial reduction of force, to perhaps 25 percent of our total work force.

One of the consequences of our change in focus is that our CHROMA laser system which we developed in the early 1970's, and which is partly owned by the DOE and partly by KMS, will become obsolete for purposes of ICF research, but there are indications of interest in using it as a unique national resource for other programs in the Department of Defense.

Recently Admiral Watkins has convened the Fusion Power Policy Advisory Committee to examine the question of what DOE's fusion policy should be in terms of structuring a program. Chairman Robert Sproull of the ICF subcommittee of that committee acknowledged that its charter is to critically evaluate ICF as an energy option.

In our view this is a welcome first step towards bringing ICF out of the shadow of solely nuclear weapons orientation and into full and open view as a potential energy source for the 21st Century.

Thank you.

Mr. **Bevill**. Thank you very much. We will work with you and do the best we can.

Mr. **Long**. Thank you.

[The statement of Mr. Long follows:]

Statement on Inertial Confinement Fusion

By: Patrick B. Long, Chairman

KMS Fusion, Inc.
Ann Arbor, Michigan

Submitted to the House Appropriations Subcommittee on Energy and Water Development

April 3, 1990

The National Academy of Sciences (NAS) 1990 Interim Report on the DOE's Inertial Confinement Fusion (ICF) program has recently been published. Confidence in the ICF approach to fusion is higher than at any time in the program's history. In order to continue this record of accomplishment, KMS believes that the Department of Energy (DOE) must focus its resources. Specifically, the Fiscal Year 1991 ICF budget should be structured in accordance with NAS recommendations to concentrate scarce resources on the ICF program's major tasks: physics experiments, target design and development.

KMS Fusion, Inc. (KMS) has accepted the challenge of focusing its efforts on target development and fabrication in support of the entire ICF program. There is enormous leverage, both scientific and economic, in developing better, more efficient targets. Better targets will result in reduced demands on driver technology, thereby enhancing the potential of a given driver to accomplish its mission and lowering the costs of developing and building a new generation of drivers. Thus, investing in target development now presents a major opportunity for a very large future economic return.

The NAS Committee report is highly supportive of the ICF program stating that it was "impressed by the high level of science and technology in the ICF program." (Interim Report, p. 4) It stated that the "primary challenge facing the ICF program in the next few years is to improve our understanding of the physics behind ICF and so allow a high-confidence decision on an LMF." (Ibid. p. 5) The Committee found that the underground experiments had "shown qualitatively that the basic concept behind ICF is sound." (Ibid. p. 2) In addition, the Committee concluded that the three main requirements for a successful ICF program are (1) Driver Performance, (2) Capsule Design, and (3) Capsule Fabrication. (Ibid. p. 2)

The NAS report also states, "In concert with an intensified experimental effort, there must be a commensurate concentration on advanced target design and fabrication....Recent demonstrations of the beta layering techniques for cryogenic targets have been encouraging, but other fabrication challenges remain." (Ibid. pp. 5-6)

KMS has been a pioneer in the field of ICF since 1970 and developed the beta layering technique cited by NAS. Recently, KMS has accepted the challenge of focusing its scientific and technical expertise on developing and fabricating better and more efficient targets (referred to as "capsules" by the NAS). In order to accomplish this, KMS, at the direction of the DOE, has ceased operating its CHROMA laser system in support of the ICF program. This action was recommended by the NAS Committee. It is the intention of KMS to continue to enhance its target development and fabrication capability in accordance with its previous testimony to this Committee.

It was somewhat disappointing to learn that the NAS Committee did not substantively deal with the issue of ICF as a potential energy source. As a private enterprise, KMS invented and demonstrated the ICF principle in 1974 using its own funds. KMS has been dedicated to the goal of bringing ICF to the U.S. as an energy source since 1970. KMS realizes that it, like the University of Rochester and the Naval Research Lab, can only play a support role as long as ICF remains solely a nuclear weapons program. However, when ICF becomes a civilian energy program, KMS can play a central role in bringing technology developed for the weapons program into the private sector.

Last year this Committee urged the DOE to recognize the long-term role of KMS in "targets" and to transfer this mission to KMS from the weapons labs. To some extent this is proceeding: The DOE has recently notified KMS that it has decided to re-compete its current ICF contract and has announced in the Commerce Business Daily that it is seeking a contractor to perform "target" work. KMS will respond to this announcement.

It is the KMS view that the pace of innovation in ICF could be accelerated and that some aspects of the ICF program could be better focused. More physics research is certainly useful, but the question remains whether this country would be better served by a more aggressive approach to ICF.

Admiral Watkins has convened the Fusion Policy Advisory Committee (FPAC) to examine the question of what DOE's fusion policy should be in terms of structuring a program which will enable this country to have fusion energy in the next century. At the March 27 FPAC meeting, ICF subcommittee Chairman Robert Sproull acknowledged that its charter is to critically evaluate ICF as an energy option. This is a welcome step towards bringing ICF out of the shadow of nuclear weapons research into full and open competition with magnetic fusion as the energy source for the 21st century.

Mr. **Bevill**. Our good friend and colleague Congressman Carl Pursell, has requested that we include a statement regarding your testimony here today.

[The information follows:]

STATEMENT FOR THE RECORD BY MR. PURSELL

IN RESPONSE TO TESTIMONY BY KMS FUSION, INC.

April 3, 1990

I read with interest your comments regarding the National Academy of Sciences' (NAS) recommendation that ICF resources be concentrated on major tasks, including target design and development. I believe target design and development provides numerous opportunities for the advancement of the ICF program.

I also note that KMS has, at the instruction of DOE, ended the CHROMA portion of its ICF activities. However, I would hope that Chroma would be left at KMS in order that KMS may perform experiments for other agencies.

On a final note, I am pleased that DOE's National Energy Strategy Interim Report, which was released yesterday, states that:

> "Nuclear fusion has the potential to be an inexhaustible energy source. As such, it merits careful consideration in this country's long-term energy strategy."

I am very optimistic about the energy aspects of fusion, including ICF, and I am pleased that Secretary Watkins has recently appointed a Fusion Policy Advisory Committee. I look forward to the Advisory Committee's recommendation on ICF.

TUESDAY, APRIL 3, 1990.

SUPERCONDUCTING SUPER COLLIDER

WITNESSES

HON. JOE BARTON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS

HON. MARTIN FROST, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS

MORTON H. MEYERSON, CHAIRMAN, TEXAS NATIONAL RESEARCH LABORATORY COMMISSION

Mr. BEVILL. Mr. Frost? The Chair will recognize you. Joe has 5 minutes and Martin, you have 5 minutes. So we have 10 minutes. You may just submit your full statements, all of you, and they will be made a part of the record. You may summarize or proceed as you wish.

Mr. BARTON. Thank you, Mr. Chairman and Members of the subcommittee. As always, it is a pleasure.

Mr. BEVILL. If I may interrupt, I notice that Mr. Meyerson also has 10 minutes. We will just take it and put it all together if that is okay.

Mr. BARTON. Thank you, Mr. Chairman.

I would hope that the time that is allotted is an indication of the support this subcommittee has for the project. It sounds like we have been given a fair amount of time. I do want to testify before you in favor of an outstanding investment in our future, the Superconducting Super Collider project.

I am going to submit my testimony for the record, so I will not read the entire testimony. I do want to make this committee aware of several things that have recently happened. Last week in the Science, Space and Technology Committee, which is the authorizing committee for the SSC, H.R. 4380, a bill permanently authorizing appropriations for the SSC, passed. It passed by a vote of 32-9. This bill is sponsored by the Chairman of the committee, the Honorable Robert Roe of New Jersey, and cosponsored by 26 other Members of his committee.

It does include a Federal spending cap on the construction of the project to $5 billion. I know that you and the other members of this committee have had some questions about the cost estimates of the project. As you know, the official cost estimate is $5.9 billion. The Department of Energy has been working for the last nine months to investigate that cost estimate. They have not revised and released it yet, but it is expected that it is going to be somewhere between $7.2 and $8 billion.

Many Members of Congress and outside observers are saying this is a cost increase in the project. Actually, Mr. Chairman, of the amount of funds that this committee has appropriated, the project is spending less than has been appropriated. So in terms of actual cost it is below what we have authorized or appropriated to be spent.

The cost estimate is going up primarily for two reasons. The baseline design in 1986 was a flawed design. As they get closer to actually building the project they have had to revise some of their decisions about exactly what it is that they want to build. That is about half of the increase.

The other half is because of some of the assumptions that were used in the original baseline. An inflation estimate of less than 3 percent was used. A wage index that had several components being fabricated at the minimum wage was used. Those were not factual variables and they need to be changed. The estimates that they are putting in now are based on real data, based on work that has been done to research the project in the last four years.

They are also based on real numbers of what it would cost to build a project in Ellis County, Texas. The Department of Labor recently released its wage index for the area. The Department also, and I know that Chairman Meyerson will talk about this, has released the exact footprint to the State of Texas. They know exactly now how much land and where that land is, and are beginning a negotiation process to purchase the land.

So just to summarize, Mr. Chairman, the SSC is a project that is important to our nation's future if we want to remain an economic power in the world, because in the 21st Century you are going to have to have basic research, high technology, economy, and that is what the SSC is all about. It is a national project. It has been supported in every vote we have had in the United States House of Representatives and Senate and every time we have had to try to convince a skeptical group. If we were able to get them to sit down and look at the project, they have supported it.

I know your committee has supported it in the past. I hope you will continue to do so in the future.

[The statement of Mr. Barton follows:]

TESTIMONY

OF

THE HONORABLE JOE BARTON (R-TEXAS, 6TH)

BEFORE THE

HOUSE ENERGY AND WATER APPROPRIATIONS SUBCOMMITTEE

FY'91 PROGRAMS UNDER ITS JURISDICTION

APRIL 3, 1990

9:55 AM, 2362 RAYBURN

IN SUPPORT OF THE SUPERCONDUCTING SUPER COLLIDER (SSC): A NATIONAL PROJECT

Mr. Chairman, Members of the Subcommittee, good morning and thank you for the opportunity to testify before you today in favor of an outstanding investment in our future, the Superconducting Super Collider (SSC). As you well know, the Super Collider will allow the United States to pursue excellent basic scientific research fundamental to the understanding of the universe.

This basic research should result in new technologies, new advances in medicine, and increased economic growth.

Last week, during a four hour mark-up in the House Science and Technology Committee, H.R. 4380, a bill permanently authorizing appropriations for the SSC, passed by a vote of 32-9. The bill, sponsored by the Chairman of the Committee Robert Roe, includes a Federal spending cap of $5 million for research, design, and construction of the SSC.

Mr. Chairman, I know you and your subcommittee have had questions concerning the SSC cost estimates. The Department of Energy is expected to soon announce a higher than the $5.9 billion figure that has been associated with the 1986 project design. This does not, in any way, mean a cost overrun. It will be the first true cost estimate for the project as it is proposed to be built. About half of the expected increase is due to design changes made necessary by the incorporation of technical information about the operations of accelerators that was not available at the time the conceptual design was prepared. The other half of the expected increase comes from revising the technical and economic assumptions that were used in the earlier estimate to provide a greater degree of accuracy. The expected cost estimate for the project is between $7.2 and $8.0 billion.

This year's funding for the SSC is crucial for the project to remain on schedule. The funding request is for $318 million with $129 million for construction. In context of the over $20 billion this subcommittee has jurisdiction over, $318 million is about 1% of the overall dollars spent.

We spend approximately $2 million a minute at the federal level. So, if we fund the SSC at $318 million, we are funding at the rate of just two hours of the federal budget. This is a small price to pay for a project that is as important as the SSC.

Many exciting developments are happening with regard to the SSC. The Second Annual International Symposium on the SSC was recently held in Miami, Florida with over 700 attendees. They came from over 35 states and 12 foreign countries, also including six U.S. Congressmen. Industry groups and universities from almost every state in the union were there. At this conference Deputy Secretary Henson Moore released the footprint for the final ring location and asked Texas National Research Laboratory Commission (TNRLC), Chairman Mort Myerson, "to start buying the land." A detailed study has been carried out to give an accurate picture of the underground structure at the site and that, in turn, has enabled us to determine the optimum placement of the collider ring, or "footprint."

The U.S. Department of Labor has also released the results of the Davis-Bacon wage survey establishing the prevailing wage rates to be paid in building construction jobs for the SSC site. More than 6,000 contractors and subcontractors were invited to participate in the wage survey, encompassing over 3,000 building projects. The Department of Labor collected wage payment data from several thousand contractors and subcontractors representing 17,588 workers in 81 crafts.

Although the exact applications which will flow from the construction and operation of the SSC cannot be predicted with absolute certainty, past investments in basic research have been repaid 100 times over. The United

States has always been a nation that looks towards the future; whether technically in this century, or whether geographically in the 1800's westward expansion, or whether in our democracy with expansion of freedom around the world.

The SSC is the preeminent high energy physics research project in the world today. Saying "no" to this project, is saying "no" to keeping America #1. Mr. Chairman, and Members of the Subcommittee, I want to thank you for your support last year for this project and I would encourage you to again support this most important project this year. The Super Collider is a real priority that has to go forward.

Mr. **Bevill**. All right.

Mr. **Frost**. Mr. Chairman, I will make a brief statement and leave most of the time for Mr. Meyerson. He is the one that I think it is important to hear from today.

Joe has already summarized the status of the project. As you know, the project will be constructed in Ellis County, which is in Joe Barton's district. The current offices for the projects are in the southwest part of Dallas County in my district. We both have taken a very strong interest in this from the beginning and your support has been vital. Your leadership last year was very important to this project and we look forward to working with you when this legislation reaches the Floor this year.

We are now at a critical point. The $318 million is a reasonable request and one that we think is necessary and fully supported in this year's budget.

At this point I would like to submit my entire statement for the record.

[The statement of Hon. Martin Frost follows:]

STATEMENT OF THE HONORABLE MARTIN FROST
BEFORE THE HOUSE APPROPRIATIONS SUBCOMMITTEE
ON ENERGY AND WATER

APRIL 3, 1990

****

MR. CHAIRMAN, I want to thank you and members of this subcommittee for allowing me to testify in support of the Superconducting Super Collider.

Last year, Congress made a very important decision when it agreed to proceed with construction of the SSC. You may recall that the House voted by a wide margin to put construction funding in the FY 1990 appropriations bill.

This year, the question is not whether the SSC should be built. We answered that question last year. Rather, the question is, at what pace should work on the SSC proceed during the coming fiscal year?

As you know, the President has requested $318 million for continued research and development of technical systems, as well as financing for further construction activities.

This is a modest sum to commit to a program that will help preserve our nation's role as the world's scientific leader. It will enable us to build upon the progress we've already made so far this year.

Last year's affirmation by Congress that it supported the SSC provided the signal that the Department of Energy needed to take the initial steps toward the start of construction. One milestone reached in February was the announcement by DOE that it had awarded the Architect Engineer/Construction contract on the SSC. This contractor will be responsible for design and construction of physical facilities for the SSC laboratory.

More recently, the Department of Energy announced that it had identified the proposed location or "footprint" for the SSC in Ellis County, Texas. The footprint refers to the shape and location of the land that the laboratory and accelerator will occupy. Now that we know precisely where the SSC will be located, the process of land acquisition by the State of Texas can begin.

So, progress is being made, and with approval of the President's budget request, we can continue to move forward.

Mr. Chairman, the SSC represents a golden opportunity to help ensure that America remains on the cutting edge of scientific research. It means that America will lead the way in discovering new technologies and developing innovative solutions to the problems confronting modern societies.

It also promises to pay tremendous dividends in another way, by encouraging our nation's youth to pursue educational opportunities in science and engineering.

Much has been said about how other countries, particularly the Japanese, are graduating many more scientists and engineers than we are, and about the serious implications this presents for our future economic growth and international competitiveness.

Clearly, the decline in enrollment in these programs in our schools must be reversed. The SSC is one way in which we can stimulate interest in science.

Universities from over 30 states will be involved with the SSC. Significant amounts of SSC money will be devoted to research conducted by American universities at the SSC site and at their own campuses. This effort will strengthen the research capabilities at these and other institutions throughout the country.

While American science and technology will benefit by increased activity at the higher education level, the real dividends will come by recapturing the interests of our nation's school children.

It is this group that represents the next generation of scientists and engineers, and who will propel our country far into the next century. It is this group that will look at the SSC and be sparked by the spirit of adventure, much like an earlier generation responded to the space program.

Already, a pilot math and science program is being developed for the school systems near the site of the SSC, and plans are underway to implement similar programs throughout the state of Texas and, ultimately, throughout the country. Basic educational programs such as this will provide a channel for young inquiring minds to explore and learn about fundamental science issues. Hopefully, this experience will serve as a catalyst for a life-long pursuit in the science and engineering fields. Our nation as a whole will benefit.

I understand the demands placed upon this subcommittee and indeed the entire Congress because of the federal deficit. We have to be more selective in how we spend our money, make better use of the limited resources available to us. I submit, however, that the SSC is precisely the type of project which is most deserving of our support. It is a project with not only near-term benefits, but one that provides an opportunity to reap benefits for many years to come.

This is an opportunity that we should not let pass us by.

Mr. Chairman, I urge this subcommittee to approve the modest level of funding requested by the President.

Mr. **Frost**. And I also would like to present to you Morton Meyerson. His official title is Chairman of the Texas National Research Laboratory Commission. He is an outstanding business and civic leader in the North Texas area, someone who I have known virtually all my life. We grew up together in Fort Worth. I followed his career in business.

He has been designated to provide the leadership for the State in this role. He has spent a great deal of his time on the SSC, worked on this project several years ago and is now back in his capacity as the chairman of the Texas National Research Laboratory Commission and has important testimony for you to hear today.

Mr. **Bevill**. Mr. Meyerson, we are pleased to have you with us. You may proceed as you wish.

Mr. **Meyerson**. Thank you very much, Mr. Chairman, it is a pleasure to be here with Congressman Barton and Congressman Frost. They have been working with me for several years on this project. I would like to thank you and the subcommittee for this opportunity to discuss with you the quality and depth of the state of Texas' commitment to the SSC.

I am chairman of the Texas National Research Laboratory Commission, appointed to serve at the pleasure of Governor William P. Clements, Jr. This is my second time to serve as chairman. I chaired the Commission from February to December 1988 before being reappointed in late 1989.

The Commission is an agency of Texas state government responsible for the state of Texas' participation in the development and operation of the SSC. The Commission was created by the Texas legislature in 1985 with the initial charge of preparing one or more proposals for the siting of the SSC in Texas.

From the 14 potential Texas sites, our Commission selected two for submission to the Department of Energy, DOE. The people of Texas' commitment to the SSC was rewarded when the site in Ellis County, Texas was chosen by the Department of Energy as the recommended site of the SSC in November 1988 and confirmed by President Reagan in January 1989 as the preferred site for the project.

The state of Texas always has been deeply committed to scientific and technological development. From space to biotechnology to high-energy physics, the people of Texas have participated in, and strongly supported, our nation's advancements; indicative of this commitment is that the people of Texas voted in a statewide election by an overwhelming 62 percent to authorize $1 billion in state funds to help finance the development of the SSC. Confident in the merits of the SSC and the Texas projects sites, Texans voted for this financial package even before the final site selection decision was made by DOE.

The Commission's primary purpose is to properly administer the approximately $1 billion in bond proceeds and other incentives the state of Texas and local entities have offered to contribute to the building and operation of the project.

In administering these contributions, our statutory authority and purposes are broad: Simply stated, we are authorized to take any action appropriate to expedite the siting, development, and operation of the SSC in Texas.

The Commission will work with DOE to develop an expenditure program for the state of Texas' funds which meets the project's needs and schedule while at the same time assuring that the interests of the citizens of Ellis County and the taxpayers of Texas are adequately protected.

On Thursday, March 15th, Deputy Secretary of Energy Henson Moore released the revised SSC "footprint" and publicly asked the state of Texas to begin acquiring the land necessary for the SSC. We are prepared to move ahead on the DOE's aggressive 22-month schedule to acquire approximately 17,000 acres of land, comprised of 1100 parcels owned by more than 500 different landowners.

Under the guidance of Universal, the state highway department, and the state attorney general's office, Texas will complete the process efficiently, expeditiously, and within DOE's time frame. In the past two weeks we have met with the over 500 of the affected landowners to discuss our requirements and to answer their questions regarding land acquisition and relocation.

The Commission's land acquisition plan reflects our strong commitment to both the SSC project and the local citizens. Accordingly, we have hired, on behalf of Ellis County, the firm of Johnson, Johnson, and Roy, based in Ann Arbor, Michigan, to develop a comprehensive land use plan for the SSC site and surrounding areas.

The Commission recently has resolved to issue bonds for the first $250 million of its billion dollar commitment. Using this money, we have begun the process of funding the following SSC activities: Land acquisition; the national SSC fellowship program. On March 20, 1990, 20 physicists from institutions in nine states, including California and Massachusetts, were awarded fellowships. We find this program to be timely and particularly important given the effects of austere budget times for developing scientists.

Interest in developing the detectors, or the "eyes" of the collider, is great. The Commission is now considering approximately 12 proposals from teams of universities across the country to begin preliminary detector research that will be vital to the success of the SSC, funded by Texas money. This type of seed money to help growing high energy physics programs around the country underscores the fact that the SSC is truly a national project.

I anticipate that the $250 million in bond money will be available in late May. The first round of bond financing will be in the form of general obligation bonds backed by the full faith and credit of the state of Texas.

The people of Texas are clearly committed to the SSC because we see the global interest inherent in this project and foresee tangible benefits accruing to both Texas and the nation.

In closing, I want to thank this subcommittee for its continued work in this nation's energy and water development activities, and for the commitment you made last year to the construction of the SSC by recommending an appropriation of $200 million. I know you are faced with difficult choices and limited funds.

I fervently believe, however, that the Superconducting Super Collider is a project so critical to the future of our country that we must not let short-term concerns cause us to lose sight of the extraordinary long-term benefits of the SSC.

I will be happy to respond to any questions you may have. Thank you.

We have submitted full testimony for the record.

[The statement of Mr. Meyerson follows:]

Summary of Request: Inform the Energy and Water Subcommittee of the House Committee on Appropriations as to the State of Texas' commitment to building the Superconducting Super Collider (SSC). Testimony is designed to aid the Subcommittee in determining fiscal year 1991 funding levels for the SSC.

TESTIMONY OF MORTON H. MEYERSON
CHAIRMAN OF THE TEXAS NATIONAL RESEARCH LABORATORY COMMISSION
HOUSE COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
APRIL 3, 1990

Mr. Chairman, I would like to thank you and the Subcommittee for this opportunity to discuss with you the quality and depth of the State of Texas' commitment to the Superconducting Super Collider (SSC).

I am Chairman of the Texas National Research Laboratory Commission (Commission), appointed to serve at the pleasure of Governor William P. Clements, Jr. This is my second time to serve as Chairman. I chaired the Commission from February to December, 1988 before being reappointed in late 1989. The Commission is an agency of Texas State government responsible for the State of Texas' participation in the development and operation of the SSC. The Commission was created by the Texas Legislature in 1985 with the initial charge of preparing one or more proposals for the siting of the SSC in Texas. From the 14 potential Texas sites, our Commission selected two for submission to the Department of Energy (DOE). The people of Texas' commitment to the SSC was rewarded when the site in Ellis County, Texas was chosen by the Department of Energy as the recommended site of the SSC in November 1988 and confirmed by President Reagan in January 1989 as the preferred site for the project.

The State of Texas always has been deeply committed to scientific and technological development. From space to bio-technology to high-energy physics, the people of Texas have participated in, and strongly supported, our nation's advancements. Indicative of this commitment is that the people of Texas voted in a state-wide election by an overwhelming 62% to authorize $1 billion in state funds to help finance the development of the SSC. Confident in the merits of the SSC and the Texas project sites, Texans voted for this financial package even before the final site selection decision was made by DOE.

The Commission's primary purpose is to properly administer the approximately $1 billion in bond proceeds and other incentives the State of Texas and local entities have offered to contribute to the building and operation of the project. In administering these contributions, our statutory authority and purposes are broad: simply stated, we are authorized to take any action appropriate to expedite the siting, development, and operation of the SSC in Texas. The Commission will work with DOE to develop an expenditure program for the State of Texas' funds which meets the project's needs and schedule while at the same time assuring that the interests of the citizens of Ellis County and the taxpayers of Texas are adequately protected.

The State of Texas is already preparing to expend bond proceeds on the project. On Thursday, March 15th, Deputy Secretary of Energy Henson Moore released the revised SSC "footprint" and publicly asked the State of Texas to begin acquiring the land necessary for the SSC. We are prepared to move ahead on the DOE's aggressive 22 month schedule to acquire the 17,000 acres of land, comprised of 1,100 parcels owned by more than 500 different landowners. Earlier this month, our Commission selected Universal Field Services of Tulsa, Oklahoma from a number of qualified bidders to be the prime contractor for land acquisition. Under the guidance of Universal, the State Highway Department, and the State Attorney General's Office, Texas will complete the process efficiently, expeditiously, and within DOE's time frame. In the past 2 weeks we have met with the over 500 affected landowners to discuss our requirements and to answer their questions regarding land acquisition and relocation.

The Commission's land acquisition plan reflects our strong commitment to both the SSC project and the local citizens. Accordingly, we have hired, on behalf of Ellis County, the firm of Johnson, Johnson, and Roy, based in Ann Arbor, Michigan, to develop a comprehensive land use plan for the SSC site and surrounding areas. The land use plan will address infrastructure needs associated with the project and suggest solutions to minimize any potentially adverse impacts of the SSC on Ellis County. It is our intention to integrate beneficially and aesthetically the SSC Laboratory into the community, develop zoning regulations to protect future operations of the Lab, and meet the needs of the area's educational system.

The Commission recently has resolved to issue bonds for the first $250 million of its billion dollar commitment. Using this money, we have begun the process of funding the following SSC activities:

- **The National SSC Fellowship Program.** The SSC fellows, 10 junior faculty members and 10 postdoctoral research associates, will spend the next academic year working at their home institutions on scientific research related to the SSC. The fellowship program provides for full salary and an allowance for travel and other research expenses. On March 20, 1990, 20 physicists from institutions in 9 states, including California and Massachusetts, were awarded fellowships. We find this program to be timely and particularly important given the effects of austere budget times for developing scientists.

- **The TNRLC SSC Research Fund.** Interest in developing the detectors, or the "eyes" of the collider, is great. The Commission is now considering approximately 12 proposals from teams of universities across the country to begin preliminary detector research that will be vital to the success of the SSC, funded by Texas money. Universities from all across the country, including Alabama, Nebraska, Massachusetts, Louisiana, California, Oklahoma, and Georgia, are seeking Texas dollars to implement their proposals. This type of seed money to help growing high energy physics programs around the country underscores the fact that the SSC is truly a national project.

I anticipate that the $250 million in bond money will be available in late May. The first round of bond financing will be in the form of general obligation bonds backed by the full faith and credit of the State of Texas.

The people of Texas are clearly committed to the SSC because we see the global interest inherent in this project and foresee tangible benefits accruing to both Texas and the nation.

In closing, I want to thank this Subcommittee for its continued work in this nation's energy and water development activities, and for the commitment you made last year to the construction of the SSC by recommending an appropriation of $200 million. I know you are faced with difficult choices and limited funds. I fervently believe, however, that the Superconducting Super Collider is a project so critical to the future of our country that we must not let short-term concerns cause us to lose sight of the extraordinary long-term benefits the SSC will certainly provide to all of us.

I will be happy to respond to any questions you may have.

Thank you.

Mr. MYERS. Now, part of the billion dollars is going to be these research funds and these fellowship programs, is that the part of the billion that you are putting up?

Mr. BARTON. Yes, sir.

Mr. MYERS. Is that part of the $8 billion, or whatever you want to say—the projected cost—is that all part of the cost, too?

Mr. MEYERSON. Yes, it is.

Mr. MYERS. We are paying researchers to go out and pay for fellowships?

Mr. MEYERSON. Well, we are funding some researchers who are looking into the subject matter of the detectors which are fundamental to the machine, and since this will be the largest scientific machine ever built in the history of the world——

Mr. MYERS. Probably the last one.

Mr. MEYERSON. Well, it might be, and we hope that we find all of the things that we were looking for. But this will support the research to make sure that the detectors are up to the power required by the machine.

Mr. MYERS. Why is the detector vital to this machine? You are going to build the detectors around the country?

Mr. MEYERSON. The research will be done around the country. The detectors will be placed in the machine in Ellis County underground and the detector is the location——

Mr. MYERS. Maybe you can get one for Alabama, Tom?

Mr. MEYERSON. They will be working on this along with other universities, Auburn. This is a device down under the ground and where the two tubes that send protons one direction in one tube and another direction in the other tube. When they bring them together to collide for the subatomic particles, this is done in a detector. It is like the eye of the microscope looking into the proton as it splits.

It is absolutely fundamental to the program that these things have the capacity to handle these kinds of collisions.

Mr. MYERS. I am not a scientist, but I do understand that.

Mr. BARTON. I have been handed what universities in Indiana reserve in research funds. Indiana, Notre Dame and Purdue have a total of $282,000 and all three of those universities are also members of URA, which is the group that is actually the prime contractor, the manager for the project.

Mr. MYERS. I have one other question. When the state administration in Texas changes—if I know there was a referendum which passed—but future legislators and governors say, "That is a terrible waste of money," what happens to the billion dollars then? Are you still obligated?

Mr. MEYERSON. Yes, sir. The taxpayers voted in favor of it. We have statutory——

Mr. MYERS. Taxpayers change us every two years sometimes. So two years can change a lot.

Mr. MEYERSON. In this case I think the bonds will already be issued. The Commission is an independent agency run by nine Commissioners, including myself, who are appointed for six-year terms and they have been appointed in two staggered terms of a Democratic and Republican governor.

I work closely with our current governor. I was appointed by him and I serve at his pleasure, but the other members do not serve at his pleasure and they are engaged for six-year terms. Since we are an independent agency with authority to issue the bonds and to handle the funds from the bonds, no matter who goes in as the governor, it won't make a difference.

Mr. FROST. This project has had unusually strong bipartisan support in our state. There is no question that all the state's leadership and both political parties are 100 percent on board and that will not change.

Mr. MEYERSON. I think it is interesting that a Speaker of the House and Lieutenant Governor are Democrats. The Governor is Republican and he is always wanting to talk about the Super Collider. They all work together. I expect when the new people are elected in the fall that they will feel the same way.

We will go forward with the project and the fund.

Mr. MYERS. We are a little gun-shy. We have been down this road before. We have had the experience—as an example, the fast breeder reactor, the breeder reactor—where everyone was for it for a while and then all of a sudden we lost favor. We have become a little gun-shy on these things. We can lose them right in the middle of a multi-billion dollar project.

Mr. MEYERSON. I can understand your concern, but in this case all the Commissioners are lined up in favor of this project and we are there for six years, except for the chairman.

But there are nine votes in there for the other Commissioners and I assure you that we will be there for the long pull.

Mr. BARTON. I might point out, John, that when the bond issue was voted on, Texas was at the height of its recession. If there was ever a time when the taxpayers of our state would have said no to something, that was the time. As Martin and Chairman Meyerson pointed out, it was supported by every region of the state, by every socio-economic group in the state, by both political parties of every stripe. Some of the most liberal members and conservative members. I would postulate that if we had a vote on it today, it would be more popular today than it was then.

So I don't think you have to worry about the state's commitment to the project. It is there.

Mr. MYERS. Would it be popular enough to increase the ante? Your billion was offered and suggested and tendered, and you have tendered it. They contracted for it when the price tag was going to be about $5 billion. Are they still interested in paying that percentage?

Mr. MEYERSON. May I answer that? I have talked to the Governor about this and the Governor has talked to the Secretary of Energy. That question has already come up and our answer has been no, we are not authorized to go above the billion and we don't——

Mr. MYERS. We are not authorized to go above five, either.

Mr. MEYERSON. In the state, our vote is limited to $1 billion and we don't intend to take it back to the voters. So we will contribute our billion.

Mr. FROST. That is a lot of money for any state to contribute to a project of this nature. No other state stepped forward with that kind of commitment.

Mr. MYERS. Okay, thank you.

Mr. BEVILL. Thank you for a very fine presentation.

TUESDAY, APRIL 3, 1990.

THERMAL STORAGE PROGRAM

WITNESS

C. EVERETT BRETT, ASSOCIATE DIRECTOR, BUREAU OF ENGINEERING RESEARCH, UNIVERSITY OF ALABAMA

Mr. BEVILL. Next is Dr. Brett, Associate Director, Bureau of Engineering Research at the University of Alabama.

Good to hear from you again. You have been with us before.

Mr. BRETT. Mr. Chairman, Congressman Myers, the University of Alabama wishes to express its appreciation for the opportunity to testify this morning. I have submitted written testimony. Also, we sincerely appreciate the support that the subcommittee has given thermal energy storage in recent years.

This is a pivotal year for thermal energy storage because there are a number of projects that are in the field testing stage or getting ready to enter the field testing stage which are on the verge of entering the marketplace which we feel is important for this technology.

As a consequence we are recommending a funding level of $5.5 million for all of the thermal energy storage programs; specifically, $2.5 million for seasonal storage at the Pacific Northwest Laboratories; $2 million for industrial storage at Oak Ridge National Laboratories; and $1 million for diurnal storage at Oak Ridge National Laboratories.

Let me remind you of the project at the University of Alabama. It is a seasonal energy storage, whereby we use water and aquifers on a seasonal basis. We use it for air conditioning. In concept it is a simple technology. We simply take water out of the ground in the wintertime, expose it to cold air and then place it back in the ground at a different set of wells and then in the summertime we bring the cold water out of the ground again and use it for air conditioning the building.

The benefits from this technology are that it reduces total energy usage by 50 to 80 percent on an annual basis. It shifts the use of power from the summer to the winter when power is more abundant. It is applicable to all large systems all over the United States, including the central cores of major cities. The payback is three to four years, which is very competitive.

Our microbiology department has determined that it also eliminated legionella which breeds in conventional cooling towers. In the cooling towers in this system, virtually all human pathogens are eliminated and there is no need for treatment because it operates in the wintertime when it is cold. We feel this is a major accomplishment because of applications in large hospitals and places like that.

There is no discernible effect on the aquifer itself and no net use of water. We are currently in a developmental phase.

There is a joint project at the General Motors Harrison Radiation Plant in Tuscaloosa that is under construction right now. General Motors has already installed more than half of the system with their own funds. We are currently in the process of completing the system this summer with DOE funds and expect to be able to put it on line this winter.

This is a 1,000-ton system. The student rec center that we are using as a prototype system is only 100 tons. So we are scaling up to that level.

We have completed a feasibility study and a preliminary design for a new patient treatment building at the VA hospital which is a 750-ton system, anticipating that both of these developmental projects will bring the technology to the marketplace very quickly, within the next two or three years feasibly.

There are other thermal energy storage technologies which we are very much in favor of that I would like to emphasize to receive support. These are primarily in the area of industrial and diurnal storage. I would like to remind the committee that what we are talking about now is recycling energy rather than wasting it to the atmosphere. In industrial usage, for instance, processed energy can be stored and saved and used in another process.

We have done studies on this and we found that the amount of energy that can be reused on an annual basis in the nation is 10 to 15 percent of total energy used at the present time. That has large implications relative to the amount of emissions put out by the power plant. If you reduce power plant emissions by 10 or 15 percent, that has implications to acid rain, ozone depletion and global warming.

One of the projects that we are very interested in is one in which thermal storage is used for power plants. It would make it more efficient and store energy in off-peak periods and reuse the energy in peak periods, thereby reducing the amount of energy demanded.

We would like to see this technology developed in the United States. The Japanese and the Europeans are currently developing the technology. We would like to do it. We would like not to buy it from them in the future.

In closing, again, we want to emphasize our appreciation for the support that thermal energy has had in the past and endorse a fiscal 1991 budget of $5.5 million for all of DOE's thermal energy storage programs.

Thank you.

Mr. BEVILL. Very good. We appreciate your testimony, and we will do the best we can.

[The statement of Mr. Brett follows:]

WRITTEN STATEMENT

by

Dr. C. Everett Brett, Associate Director
Bureau of Engineering Research
College of Engineering
The University of Alabama

to the

Subcommittee on Energy and Water Development
House Committee on Appropriations
Hearings on Fiscal Year 1991 Appropriations for the
Department of Energy Thermal Energy Storage Programs
April 3, 1990

This statement pertains to FY 1991 Department of Energy R & D Appropriations for Thermal Energy Storage Research. The University of Alabama strongly endorses the continuation of thermal energy storage research at a modest level of funding and offers recommendations whereby an effective R & D program can be continued at a funding level of $5.5 million, we recommend the following specific programs for Thermal Energy Storage:

Seasonal Storage-	$2.5 million - allocated to Pacific Northwest Laboratories
Industrial Storage-	$2.0 million - allocated to Oak Ridge National Laboratory
Diurnal Storage-	$1.0 million - allocated to Oak Ridge National Laboratory

These recommendations provide levels appropriate for field experiments which are necessary to continue the research in the several categories. We also recommend that wording be placed in the report that will permit the use of some of these funds for field experiments and their installation.

The University of Alabama develops, conducts, and supports alternative energy and environmental research which responds to state, regional, and national needs. To accomplish these goals, The University of Alabama has committed substantial funds and human resources for many years to research directed at finding ways of reducing the use of and conserving the nation's energy resources and reducing the environmental impact of producing energy. The Department of Mechanical Engineering has been conducting research in thermal energy storage in aquifers since 1977.

Thermal energy can be stored seasonally in aquifers either as heat for winter heating or as chill for summer air conditioning. The College of Engineering has concentrated its efforts on research pertaining to the storage of chilled water for air conditioning because of the high electrical energy demands for air conditioning throughout the South. Air conditioning occurs the year around in large buildings, even in the cold northern latitudes of Canada because of the internal loads generated. Aquifer air conditioning consists primarily of pumping groundwater in the winter from one set of wells, cooling it by exposure to cold air temperatures and returning it to the aquifer in a second set of wells. Flow between the two sets of wells creates a storage volume that contains the chilled water on an annual cycle. In summer, the flow is reversed and chilled water is pumped back to the surface and used for air conditioning buildings. After the water cools a building, it is pumped back into the original set of wells and the cycle is subsequently reversed.

Our results through theoretical modelling and through experience with prototype air conditioning systems constructed in the Parisian Department Store in Tuscaloosa, Alabama, and in The University of Alabama Student Recreation Center show that a minimum of 50% of the air conditioning energy and cost can be saved as compared to conventional electrical air conditioning systems. The cost of purchasing and operating expensive chillers is eliminated. The main components of the system are the cooling towers or cooling ponds used to chill water, the wells, pumps, the connecting piping, the aquifer itself, and controls to operate the system. Our studies further indicate that, in systems which incorporate cooling ponds for winter heat exchange, as much as 80% of the cost of electricity and energy can be eliminated. These cooling pond studies have yet to be tested in the field to corroborate the calculations. Approximately 70% of the nation's population is located in areas where aquifers are available for thermal storage.

In addition to the aquifer air conditioning systems constructed for the Parisian Department Store and the University of Alabama Student Recreation Center, a 1000 ton system has been designed by the University for the General Motors Harrison Radiator Plant in Tuscaloosa. The construction costs as confirmed by bidding show a payback on investment of three to four years. General Motors Corporation wishes to participate in a monitoring program to evaluate the operational effectiveness of the system, and has indicated that they would have a strong interest in using this energy conserving technology throughout their industry. Work on this project has already begun and should be completed this year in time to begin chilling groundwater in the Fall. This is a joint project funded by DOE and General Motors. General Motors has already completed a major part of the installation.

In addition to the aquifer air conditioning system just described, the Veterans Administration Hospital in Tuscaloosa is planning the construction of a major new treatment building to replace several old buildings. Aquifer air conditioning is being considered as part of the work. These plans have been reviewed by the Veterans Administration Engineering Division in the Washington, D.C. Central Office and have been conceptually approved for the Tuscaloosa site. A preliminary design has been completed and an extensive site evaluation was conducted during the summer of 1989 which showed the site to be ideal for an aquifer air-conditioning project. The site evaluation was funded by DOE and conducted jointly by The University of Alabama and Battelle Pacific Northwest Laboratories.Later plans included incorporating all buildings at the site into a district cooling and heating system. This is an ideal site to demonstrate the commercial application of aquifer air conditioning because of the benefits that would accrue to the Veterans

Administration. In this particular case, all of the treatment buildings could be incorporated into a single distributed system with the storage volume located in a large area under the buildings. It would be very beneficial for the Seasonal Storage Program in the Department of Energy to monitor such a system because it would be a fourth generation design benefitting from the design experience at the General Motors Radiator Plant.

A successful experience at the Veterans Administration Hospital and the General Motors Radiator Plant could result in the construction of aquifer storage air conditioning systems throughout the General Motors organization and similar installations at federal facilities such as VA Hospitals, military bases, and other large federal installations which could significantly reduce the governments energy bill.

Of great importance is that thermal storage and aquifer air conditioning will reduce the total national demand for electricity, thus limiting the need for new electrical generating equipment and potentially limiting environmental degradation caused by generating electricity, (acid rain, etc.). The technology also load-levels by shifting the demand for electricity for air conditioning from summer to winter when electricity is abundantly available. Applied throughout the United States where aquifers are available, the potential energy impact is a savings of 4.9 quads of energy from Seasonal Storage alone where the United States annually uses approximately 75 quads of energy. A reduction of energy use of this magnitude is not only a major economic savings, but will also reduce power plant emissions proportionately, thus mitigating the effects of acid rain, ozone depletion, and global warming.

The University of Alabama has been deeply involved in improving our research base in thermal energy storage; hence, we offer our thoughts regarding the priorities for thermal energy storage research as a national program. The Thermal Energy Storage Program (TES) has historically supported the development of TES technologies that 1) utilize off-peak electricity for heating or cooling, 2) enable utilization of renewable energy resources, such as solar and seasonal chill, and 3) provide ways to use waste heat for seasonal thermal energy storage and to lower overall industrial energy consumption. Applications oriented research in these areas has been accompanied by fundamental work to analyze and develop our understanding of geophysical and geochemical issues impacting aquifer TES, field testing of high-temperature aquifer seasonal TES and seasonal chill storage, and the development of schemes for using TES in utility power plants.

The entire U.S. Department of Energy (DOE) Thermal Storage Program consists of funded research in the areas of 1) diurnal TES, in which heat (or chill) that is available at one time of day is stored for use at a later time; 2) industrial TES, in which heat that is available during one industrial process is stored for use in another; and 3) seasonal TES, which exploits reservoirs, such as aquifers, as a storage medium for long-term storage of heat and chill. All of these technologies promote the concept of recycling energy rather than wasting it to the atmosphere. The seasonal portion of the program is managed by PNL while the diurnal and industrial components are managed by Oak Ridge National Laboratories.

There are several major projects in the TES Program that are reaching a stage where technology transfer initiatives are underway. Examples include aquifer chill storage for space conditioning applications, aquifer heat storage for space conditioning and process heat applications, and utility thermal energy storage. Clearly all of the problems and issues concerned with TES have not been solved.

However, significant progress has been made, placing selected TES systems at the threshold of commercialization where support for a continued TES Program is most needed.

As for future development of TES technologies, the need is perhaps greater now than before. It comes as no surprise that energy supply and use in the United States is undergoing substantial change, primarily as a result of several economic and environmental factors:

- Electricity usage continues to grow particularly at peak periods of the day, thereby worsening the utility load factor. For the near-term, base load generating capacity is adequate; however, in some areas of the country, a peak capacity shortfall is projected for the mid-1990's.
- The fraction of imported oil used in the United States (now at 45%) continues to grow while domestic production has dropped to its lowest level in a decade.
- Environmental concern for acid rain, ozone depletion, and global warming is increasing.

Development and implementation of energy storage technologies can make a major contribution to resolve each of these issues. Through its ability to couple an energy supply to a demand when there is a temporal mismatch, TES substitutes abundant base load electricity to be used during periods of peak demand. This offsets the need for peak power generation from oil and gas, improves utility leak factors, and decreases overall plant heat rates. Technologies based on TES facilitate use of renewables, such as solar, where availability of the energy resource does not coincide with the need. Finally, primary energy is conserved when TES is used to capture industrial waste heat for reuse.

A strong productive TES Program gives a competitive edge to U.S. industry in world markets through lowered unit production costs, improved balance of trade, and in the development of TES products and related systems for export.

Despite the need for further applied research in TES, funding of the program has been reduced from a high of $51.9M in 1980 to $1.1M projected to be spent on TES development in FY90. At this funding level, successful transfer of even the most near-term technologies to industry is at grave risk. Two questions become obvious: 1) What is a realistic level of support for TES research? and 2) What steps can be taken to secure the required funding? With respect to the first question, a review of the entire TES Program was conducted 1 year ago by an ASME expert panel chaired by A.E. Bergles of Rensselear Polytechnic Institute. The panel concluded that the TES Program is highly deserving of continued support and further recommended that the DOE budget for TES be increased to a level of $5.5M annually. This sustained funding level would permit further development of TES materials and systems that are within reach of cost and performance goals.

A key issue in industry is energy competitiveness. The Europeans and Japanese utilize heat in any form to improve competitiveness. Much of the technology they currently use has been conceptualized in the United States and developed in foreign countries. Unless we can continue to develop our own energy technology we will soon be buying the technology from foreign sources. We should be in a position to export energy technology but the path we are currently taking will place us in a position of being importers not only of energy but of the energy technology to best use it. Even now all the generators use in the southern California windmill farms are built by Mitsubishi.

Thermal energy storage can make a significant contribution toward the solution of the energy problems facing the United States. The United States must deal with two energy issues: (1) the nation is becoming increasingly dependent on imported oil and (2) increased demand for electric power will require approximately 100,000 Megawatts of additional peak electric power generating capacity by the year 2000.

Thermal energy storage can reduce oil consumption by facilitating the use of waste heat and winter chill for space heating and industrial process heat. Thermal energy storage has the potential to reduce national energy consumption by approximately 10 quads. The demand for peak electric power can be reduced by storing heat and chill produced during off-peak time periods for heating and cooling during peak demand periods. In addition, thermal energy storage in a power plant can increase peak generation capacity. Thermal energy storage has the potential to reduce peak demand by 1.7 quads and to increase peak generating capacity by 20,000 Megawatts.

If DOE does not adequately fund thermal energy storage development, the technology will be developed overseas instead. Thermal energy storage will ultimately be used in the United States because its advantages are compelling. The question is, will this technology join the growing list of those originated in the United States but commercialized overseas?

The University of Alabama strongly endorses continued funding of the Thermal Energy Storage Research Program especially in the areas of Industrial Storage, Seasonal Storage, and Diurnal Storage, and urges the appropriation of the very modest $5.5 million for its continuation in FY 1991.

TUESDAY, APRIL 3, 1990.

HYDROGEN FROM RENEWABLE ENERGY

WITNESS

KENNETH R. HALL, DEPUTY DIRECTOR, TEXAS ENGINEERING EXPERIMENT STATION

Mr. **BEVILL.** Next is Dr. Kenneth Hall, Deputy Director, Texas Engineering Experiment Station, Texas A&M University System.

Your prepared statement will be made a part of the record.

Mr. **HALL.** Thank you, Congressman Bevill, subcommittee Members. I appreciate the opportunity to present testimony today.

My name is Kenneth Hall, Deputy Director of the Texas Engineering Experiment Station and Associate Dean of Engineering at Texas A&M University.

Today, I represent the four Institutes of the Renewable Hydrogen Consortium: the Center for Electrochemical Systems and Hydrogen Research (Dr. A. John Appleby, Director), the Clean Energy Institute (Dr. T. Nejat Veziroglu, Director), the Florida Solar Energy Center (Dr. David L. Block, Director) and the Hawaii Natural Energy Institute (Dr. Patrick K. Takahashi, Director).

Dr. A. John Appleby was to have presented this testimony, but he is unable to be with us. Representatives of the other Institutes are present in the audience today.

Following comparative neglect of long-term energy strategy since 1980, several energy-related concepts are beginning to dawn upon the national consciousness. These considerations can have significant implications for national growth and security during the next decade. They are: the nation's economy is inextricably tied to energy costs and availability; electricity demand is expanding, and capacity shortfalls are imminent or already exist in some areas of the country; attempts to encourage transportation fuels other than those based upon oil products have not been successful; foreign control of oil resources threatens not only the national economy, but also the national security; and environmental risks posed by fossil energy consumption and by the political and economic mishandling of nuclear power threaten both national and global welfare.

These concerns combine to form a complex series of problems which may become the most difficult that the nation has ever addressed.

The most efficient and economical end-use energy for most applications is electricity. Electricity produces no pollution at the point of use, and is easily directed and controlled. However, the large, central steam plants traditionally used for electricity production are capital intensive and, when employed with inexpensive fuels such as coal, are not environmentally benign. Only large steam or nuclear plants make sense from an engineering viewpoint, but these require so much time to build and license that utilities have been reluctant to add new capacity.

While electricity is desirable for stationary applications, it is difficult to store for use in transportation, even though its use for this purpose would greatly reduce the problems of urban pollution. Urban pollution will demand reduced tailpipe emissions, but the use of most fossil-based fuels will continue our dependence on foreign oil, and undermine our energy security.

In the 1970's, the vehicle fuel of the future was expected to be methanol manufactured from domestic coal. While methanol would reduce some urban emissions, it would double carbon dioxide emissions compared to continued use of gasoline.

Further development of nuclear energy would certainly reduce chemical emissions and their atmospheric products, but unfortunate political, technical and economic decisions coupled with stifling regulations makes its contribution unlikely in the foreseeable future.

Thus, the ultimate solution to the energy-related problems cited above must be an eventual shift into the use of renewable energy resources, with strong emphasis on developing electrical and transportation alternatives.

We have previously testified on the importance of developing hydrogen fuels from renewable energy resources. Mr. Chairman, your subcommittee and the Congress have consistently supported the concepts and the programs of the Renewable Hydrogen Consortium. The University Institute members of the Consortium, under the management of the Solar Energy Research Institute, have undertaken the National Hydrogen Research Program using an appropriation from the subcommittee since fiscal year 1988. This has totaled $2.4 million annually.

We emphasize that this is the entire R&D effort at the Department of Energy on the use of hydrogen as a storable means of transporting clean energy from one place to another, allowing maximum conversion efficiency for both its production and end-use. The DOE can claim that it is spending over ten times this figure on hydrogen R&D, but the majority of these funds relate to studies of hydrogen properties and handling under the special conditions of the nuclear industry and for nuclear fusion.

In the short term, hydrogen can act as an energy supplement to our traditional energy supply. In the final analysis, only hydrogen produced from renewable resources can meet long-term concerns. By producing the hydrogen fuel of the future from renewable resources, we can ensure that its production does not create as many problems as it solves. Hydrogen from renewables has no significant global warming implications.

The renewables may be solar radiation or some indirect form of solar energy such as wind or biomass. Solar radiation and wind can produce electricity. The ideal storage medium for this electricity is hydrogen because it can be converted back to electricity at high efficiency using fuel cells.

To date, the Renewable Hydrogen Consortium has conducted detailed studies on all aspects of hydrogen production, storage and utilization. Experiments have begun on hydrogen production using advanced photoprocesses and photobiological methods. In the storage area, research has focused on enhanced metal hydrides, chemical carriers and mixed gases. Safety issues are being addressed, as is hydrogen fuel utilization in vehicles.

While the U.S. Renewable Hydrogen Program has made great progress during its three years of existence, other nations, particularly Japan and West Germany, are fast outpacing U.S. research on and development of the hydrogen energy alternative. Last year, Japan committed 10 times as much funding as the United States. West Germany spent $50 million for hydrogen research in 1988–89. West German companies are already proposing hydrogen fuel applications such as hydrogen-powered cars.

In addition, the West German government is sponsoring the world's largest renewable hydrogen project, which proposes to produce hydrogen in Canada from hydropower, and ultimately from photovoltaic electricity in North Africa. The first application will be in city buses, for which the German automobile manufacturers are developing auxiliaries, such as pumps, and infrastructure.

The United States has developed similar technology for the specialized needs of the Space Program, but none of this technology has been reduced to terrestrial practice. Once again, this may be a case of the United States developing technologies and foreign competition reaping the benefits.

Development of hydrogen and fuel cells for the storage and use of solar energy is one of the most important issues facing widespread renewable energy utilization. The ability to store and ultimately follow the given load is, without a doubt, one of the largest impediments to solar use. Hydrogen offers solar energy a storage medium, and fuel cells give it the required load-following capability.

Hydrogen is not ordinary fuel, because it can be converted into useful electricity by direct energy conversion, i.e., without hot combustion, in a fuel cell. All other fuels must be burned, leading to a 40 percent efficiency of conversion to work. Hydrogen conversion to electricity can, in contrast, be as high as 65 percent. This unique property of hydrogen should be exploited, because it can result in lower energy costs and dramatically reduced pollution.

Efficiency is only one of many attractive features of fuel cells. Insignificant pollution, modularity, siting flexibility, compactness, load following capability, short construction time and an extremely broad range of application potentials make fuel cells a power generation technology unmatched by any other.

In summary, hydrogen from renewables offer solutions to the possible greenhouse effect, because of the potential for significant savings in carbon dioxide emissions in both transportation and power generation sectors.

In addition, these technologies can help to reduce the nation's trade deficit, the largest portion of which is caused by importation of foreign oil. The work conducted by the Renewable Hydrogen Consortium is critical in that it lays the groundwork for future hydrogen R&D and for the appropriation being addressed here today.

The Nation and the Department of Energy are poised on the brink of significant advances in hydrogen R&D. We wish to send a clear message that we, as representatives of the academic community, support the congressional leadership in advocating continued hydrogen R&D. In consequence, the Renewable Hydrogen Consortium strongly urges an increase in its appropriation from $2.4 million to $3.6 million for fiscal year 1991, and thanks the subcommittee for its support since fiscal year 1988.

[The statement of Mr. Hall follows:]

The Renewable Hydrogen Consortium: R&D Activity

Testimony before the Energy and Water Developments Subcommittee on Appropriations
U.S. House of Representatives
April 3, 1990

Dr. K. R. Hall
Deputy Director, Texas Engineering Experiment Station
Associate Dean, Engineering
Texas A&M University
College Station, TX 77843

Congressman Bevill, Subcommittee Members thank you for the opportunity to present testimony today. My name is Kenneth R. Hall, Deputy Director of the Texas Engineering Experiment Station and Associate Dean of Engineering at Texas A&M University. Today, I represent the four Institutes of the Renewable Hydrogen Consortium: the Center for Electrochemical Systems and Hydrogen Research (Dr. A. John Appleby, Director), the Clean Energy Institute (Dr. T. Nejat Veziroglu, Director), the Florida Solar Energy Center (Dr. David l. Block, Director) and the Hawaii Natural Energy Institute (Dr. Patrick K. Takahashi, Director). Dr. A. John Appleby was to have presented this testimony, but he is unable to be with us. Representatives of the other Institutes are present in the audience today.

Following comparative neglect of long-term energy strategy since 1980, several energy-related concepts are beginning to dawn upon the national consciousness. These considerations can have significant implications for national growth and security during the next decade and beyond. They are:

- The nation's economy is inextricably tied to energy costs and availability.
- Electricity demand is expanding, and capacity shortfalls are imminent or already exist in many regions of the country.
- Attempts to encourage transportation fuels other than those based upon oil products have been weak, misdirected, and too variable to provide a long-term solution.
- Foreign control of oil resources threatens not only the national economy, but also the national security.
- Environmental risks posed by fossil energy consumption and by the political and economic mishandling of nuclear power threaten both national and global welfare.

These concerns combine to form a complex series of problems which may become the most difficult that the nation has ever addressed. To fuel a growing economy, the nation requires increased energy end-use in the future.

The most efficient and economical end-use energy for most applications is electricity. Electricity produces no pollution at the point of use, and is easily directed and controlled, especially for state-of-technology industrial applications. However, the large, central steam plants traditionally used for electricity production are capital intensive and, when employed with inexpensive fuels such as coal, are not environmentally benign. Only large steam or nuclear plants make sense from the engineering viewpoint, but these require so much time to build and license that utilities have been reluctant to add new capacity.

While electricity is desirable for stationary applications, it is difficult to store for use in transportation, even though its use for this purpose would greatly reduce the problems of urban pollution. Transportation in the future is envisaged simply as an extrapolation of the past, using the same mechanical devices as those of today. Urban pollution will demand reduced tailpipe emissions, but the use of most fossil-based fuels will continue our dependence on foreign oil, and thus undermine our energy security. In the 1970's, the vehicle fuel of the future was expected to be methanol manufactured from domestic coal. While methanol fuel would reduce some urban emissions, its use would double carbon dioxide emissions compared to continued use of gasoline. It is now proposed that methanol manufactured from inexpensive foreign natural gas should be imported. This will exacerbate the problem for national security.

Further development of nuclear energy would certainly reduce chemical emissions and their atmospheric products, but unfortunate political, technical and economic decisions coupled with stifling regulations makes its contribution unlikely in the foreseeable future. Thus, the ultimate solution to the energy-related problems cited above must be an eventual shift to the use of renewable energy resources, with strong emphasis on developing electrical and transportation alternatives.

We have previously testified on the importance of developing hydrogen fuels from renewable energy resources. Mr. Chairman, your Subcommittee and the Congress have consistently supported the concepts and the program of the Renewable Hydrogen Consortium. The University Institute members of the Consortium, under the management of the Solar Energy Research Institute, have undertaken the National Hydrogen Research Program using an appropriation from this Subcommittee since FY88. This has totaled \$2.4M annually from FY88 to FY90, not including an additional \$600K provided via Brookhaven National Laboratory to Syracuse University for studies of cold hydrogen storage on carbon.

We emphasize that this is the entire R&D effort at the Department of Energy on the use of hydrogen as a storable means of transporting clean energy from one place to another, allowing maximum conversion efficiency for both its production and end-use. The DOE can claim that it is spending over ten times this figure on hydrogen R&D, but the majority of these funds relate to studies of hydrogen properties and handling under the special conditions of the nuclear industry and for nuclear fusion. This bears no relation to the use of hydrogen as an alternative energy carrier to meet our long-term needs for on-site and transportation power .

In the short term, hydrogen can act as an energy supplement to our traditional energy supply. In the final analysis, only hydrogen produced from renewable resources can meet long-term concerns. By producing the hydrogen fuel of the future from renewable resources, we can ensure that its production does not create as many problems as it solves. Hydrogen from renewables has no significant global warming implications. The renewables may be solar radiation or some indirect form of solar energy such as wind or biomass. Solar radiation and wind can produce electricity, which can be used on site where possible. This electricity must, however, be stored for use throughout all hours of the year. The ideal storage medium for this electricity is hydrogen because it can be converted back to electricity at high efficiency using fuel cells. Hydrogen can upgrade biomass to manufacture traditional fuels, or it can be made by gasification of biomass. While biomass transformations involve carbon dioxide, this is recycled in the atmosphere without accumulation.

To date, the Renewable Hydrogen Consortium has conducted detailed studies on all aspects of hydrogen production, storage and utilization. Experiments have begun on hydrogen production using advanced photoprocesses and photobiological methods. In the storage area, research has focussed on enhanced metal hydrides, chemical carriers and mixed gases. Safety issues are being addressed, as is hydrogen fuel utilization in vehicles. The consortium has also conducted analyses of various transition scenarios to the hydrogen economy.

While the U.S. Renewable Hydrogen Program has made great progress during its three years of existence, other nations, particularly Japan and West Germany, are fast outpacing U.S. research on and development of the hydrogen energy alternative. Last year, Japan committed to hydrogen R&D more than 10 times as much funding as the United States. West Germany spent $50M for hydrogen research in 1988-89. West German companies, such as Daimler-Benz and BMW, are already proposing hydrogen fuel applications such as hydrogen-powered cars. In addition, the West German government is supporting the world's largest renewable hydrogen project, which proposes to produce hydrogen in Canada from hydropower, and ultimately from photovoltaic electricity in North Africa. It is proposed that the hydrogen be shipped to Europe as liquid using tankers or pipelines. The first application will be in city buses, for which the German automobile manufacturers are developing auxiliaries, such as pumps, and infrastructure. The United States has developed similar technology for the specialized needs of the Space Program, but none of this technology has been reduced to terrestrial practice. Once again, this may be a case of the United States developing technologies and foreign competition reaping the benefits.

Foreign competition also comes from unexpected quarters. Last fall, at the 7th World Hydrogen Energy Congress in Moscow, those in attendance witnessed two surprises. The first occurred when the USSR keynote speaker addressed the greenhouse effect and the huge potential of hydrogen to ameliorate its damage to our world. In fact, the hydrogen solution to global warming was the chief subject of discussion among the more than 700 scientists in attendance from all over the world. The second surprise was the presentation of a film showing Aleksei A. Tupolev's historic first flight of a modified Soviet TU-155 commercial jet powered by liquid hydrogen. Technological competition in hydrogen research and development comes even from the Soviet Union in spite of their current economic turndown.

Development of hydrogen and fuel cells for the storage and use of solar energy is one of the most important issues facing widespread renewable energy utilization. The ability to store and ultimately follow the given load is, without a doubt, one of the largest impediments to solar use. Hydrogen offers solar energy a storage mechanism, and fuel cells give it the required load-following capability. Thus far, the authorization of the Renewable Hydrogen Program has only been on hydrogen production, handling, and storage. Equally important, in our view, is the development of improved hydrogen end-use for both load-following and transportation applications.

Hydrogen is no ordinary fuel, because it can be converted into useful electricity by direct energy conversion (i.e., without hot combustion) in a fuel cell. All other fuels must be burned, leading to a 40% efficiency of conversion to work. Hydrogen conversion to electricity can, in contrast, be as high as 65%. This unique property of hydrogen should be exploited, because it can result in lower energy costs and dramatically reduced pollution. Efficiency is only one of many attractive features of fuel cells. Insignificant pollution, modularity, siting flexibility, compactness, load following capability, short construction time and an extremely broad range of application potentials make fuel cells a power generation technology unmatched by any other. Thus, dedicated hydrogen fuel cells offer a clean, efficient alternative means of generating electric power, as well as a practical alternative for electric vehicle propulsion. However, the technology for using hydrogen fuel cells is not available today as engineered units, although component development work has been conducted.

As an example, a hydrogen fuel cell-electric motor combination could have three times the efficiency of a spark-ignition engine and twice the efficiency of a diesel engine in urban use. Such vehicle fuel cells can virtually eliminate urban air pollution currently caused by gasoline-driven cars. In spite of these facts, only a limited R&D effort has so far been made in this area. We urge that the important subject of improved hydrogen end-use be addressed by the Department of Energy in future years.

In summary, hydrogen from renewables offer solutions to the possible greenhouse effect, because of the potential for significant savings in carbon dioxide emissions in both transportation and power generation sectors. In addition, these technologies can help to reduce the nation's trade deficit, the largest portion of which is caused by importation of foreign oil, as well as increase national security. The work conducted by the Renewable Hydrogen Consortium is critical in that it lays the groundwork for future hydrogen R&D and for the Appropriation being addressed here today. As is realized by our foreign competitors, enhanced R&D for hydrogen production from renewables is a necessity if we are to make the transition from globally polluting to benign power sources.

The Nation and the Department of Energy are poised on the brink of significant advances in hydrogen R&D. We wish to send a clear message that we, as representatives of the academic community, support the Congressional leadership in advocating continued hydrogen R&D. In consequence, the Renewable Hydrogen Consortium strongly urges an increase in the Appropriation from $2.4M to $3.6M for FY91, and thanks the Subcommittee for its support since FY88.

Mr. BEVILL. Thank you for your fine presentation.

We will certainly do what we can.

TUESDAY, APRIL 3, 1990.

UNIVERSITY ENVIRONMENTAL AND FUEL CELL PROGRAMS

WITNESSES

FATHER WILLIAM L. GEORGE, GEORGETOWN UNIVERSITY
FATHER T. BYRON COLLINS, GEORGETOWN UNIVERSITY

Mr. BEVILL. Next we have Father George and Father Collins.

We will be glad to hear from you. Good to see you again. Your prepared statements will be made a part of the record. You may summarize, if you wish.

Father GEORGE. I am Father George. With me is my educator and mentor, Father Collins. We are Assistants to the President of Georgetown.

Georgetown University, partially because of this committee, mostly because of this committee, was designated as a national exemplar for community energy systems. We have put together probably the most elaborate and advanced program integrating various energies from fluidized bed boiler and high speed turbine with that from other sources.

The photovoltaics which you helped us with allowed us to design a building that is beautiful, reservoirs that use energy at nighttime to cut the peak and conserve energy as well as get cheap energy for institutions, and fuels help program, whatever. We really have a complicated system. Everything has been geared to commercializing the type of energy we are using.

We have been relatively successful with that. We are at the beginning of a new generation of a major integrated community energy system to the tune of actually supplying electricity for power companies, and developing up to 56 to 60 megawatts of electricity in a community local environment doing it cleaner than the energy that is produced now.

We are planning that and look forward to begin commercializing that for about 3000 colleges and universities and perhaps small communities, really working with our power company, Pepco, Energy Dominion, people of that sort, putting a lot of commercial money in with our own resources.

We would like to ask the committee if you would help us plan that this year. That is basically what we are trying to do. Our whole goal is so that we can set up an integration, depending on the need, applying the need you have for energy and your local community needs with the right type of energy.

It is very exciting stuff. People thought we were crazy when we started some of these coal projects that you helped us with. Now when people look to clean coal, the Canadians, Chinese and Japanese have been looking at that boiler, and we say we have been burning coal cleanly in downtown Georgetown for 10 years.

The technology is there. We feel that is even behind the times now. We are ready to move on. We are asking you to help us plan that.

That is our request, Mr. Chairman.

[The statement of Fr. George and Fr. Collins follows:]

HOUSE APPROPRIATIONS - ENERGY AND WATER DEVELOPMENT FOR FY91

A NATIONAL EXEMPLAR FOR COMMUNITY ENERGY SYSTEMS

We are Fr. William L. George, S.J., and Fr. T. Byron Collins, S.J., Assistants to the President of Georgetown University.

In the Budget of the United States under Energy Conservation, Buildings and Community Systems, it states "the fiscal year 1991 buildings and community systems program will support research in building systems, community systems, technology and consumer products, appliance standards, the Federal energy management program, and technology assessment and transfer activities to assist the private sector in adopting new energy conserving technologies for new and existing buildings. New initiatives planned for 1991 include...steps to accelerate the implementation of building energy conservation standards and guidelines..."

Georgetown University is designated as a national exemplar for community energy systems. Working with this Committee, we have installed a successful atmospheric fluidized bed clean coal project, a cryo-aquatic reservoir of 2.2 million gallons, and a 300 kilowatt photovoltaic system. This is a part of a master utility plan developed with this Committee and the Department of Energy for higher education. As another section of the master utility energy plan, we have completed a 2.8 megawatt advanced high speed turbine cogenerator driven by the clean coal project. All of the above programs are master-controlled by a sophisticated central computer energy distribution and control system.

As a follow-on to the above projects and in concert with the master facilities plan of the University for the next twenty years, a major gas turbine cogenerator of 56 megawatts is proceeding. With this project, we will solve the environmental problems involved with cogeneration so that it may be safely replicated in other higher education institutions.

We seek Committee participation in the national exemplar advanced cogeneration integrated community energy system. Specifically, we are requesting that the Committee supply funding for planning and systems control this year (fiscal year 1991) for this higher education exemplar cogeneration program. We are seeking Committee support in about 16% of the total program. This project will immediately be in the commercialization mode. We thank the Committee for its continued interest in worthwhile and successful energy and water projects. On behalf of our president, Rev. Leo J. O'Donovan, S.J., we thank you for this opportunity to testify.

Father **Collins**. I would like to add that we as a university in the most restricted area of the United States in terms of zoning and national capital planning, we have 45 planning agencies, we can make this thing work, decentralizing so that universities across the nation can join. The few dollars we are asking will be well spent. Thank you.

Mr. **Bevill**. Thank you. We will do what we can.

Thank you for your appearance.

Mr. **Myers**. How long does it take to see the fluidized bed?

Father **George**. We have got a model and everything, a room designed for it. It will take you 10 minutes.

Mr. **Myers**. I would like to come over some day.

Tuesday, April 3, 1990.

MAGNETIC AND INERTIAL FUSION

WITNESS

SUSAN KINCAID, DIRECTOR OF PUBLIC RELATIONS, FUSION POWER ASSOCIATES

Mr. **Bevill**. Next is Dr. Dean, but I don't believe he is in here yet.

Ms. **Kincaid**. Dr. Dean is unable to attend this morning.

My name is Susan Kincaid. I am Director of Public Affairs. Dr. Dean asked if you would give your permission to have me present a brief summary of his statement which I have submitted for the record?

Mr. **Bevill**. The chair will recognize you. Your statement will be made a part of the record. You may summarize it.

Ms. **Kincaid**. Dr. Dean, this year, would like to ask your very strong support for the fusion program.

As you know, Secretary Watkins has put the fusion program on hold this year pending the recommendations of the newly formed Fusion Policy Advisory Committee which has asked you to review the draft policy statement of Dr. Robert Hunter, who is a former Director of Energy Research.

Dr. Dean and virtually every member of the fusion community feels that this draft policy was technically ill-founded and strategically ill-conceived.

They all feel very strongly that the Fusion Policy Advisory Committee will follow the recommendations of virtually every other committee which has also reviewed the fusion program, and recommend that fusion be strongly supported and progress new engineering development. The fusion program has made extraordinary progress over the years.

It is ready to enter engineering development. In order for the program to be able to do that, it needs to be maintained at a healthy strong level this year in order to be able to take up again where it left off.

Specifically, Dr. Dean requests that you not cut the fusion program, that not only do you not cut it, but that you add an additional $25 million to the magnetic fusion program in order to maintain it in a healthy posture.

In addition, he would also like to ask your support of the inertial confinement fusion program and that you consider raising the budget level of that program to the level recommended by the National Academy of Sciences. That is to a level of $186 million compared to the $167 million requested by the President.

Dr. Dean, along with eight other leaders of the fusion community, David Baldwin of the University of Texas, Tip Brolin from Princeton Plasma Physics Laboratory, Alex Glass from Lawrence Livermore Laboratory, Rulon Linford from Los Alamos, David Overski in General Atomics, Ron Parker from MIT, and Joseph Sheffield of Oak Ridge National Laboratory, have over the past several months drafted an alternative fusion development plan that they have submitted to the Fusion Policy Advisory Committee because they did feel that Dr. Hunter's plan was so inadequate.

An executive summary of that plan has been included in the written statement of Dr. Dean for your review.

In addition, Dr. Dean has attached to his testimony a statement by one George Clemens, who is a mechanical engineer by training and is a successful inventor who is about 75 years old and who is now devoting his resources and energies to encouraging the development of fusion power.

Mr. Clemens has written a statement which I shall also submit. He also requests that you add an additional 25 million to the fusion budget for this year.

[The information follows:]

Fusion Power Associates

STATEMENT OF
DR. STEPHEN O. DEAN
PRESIDENT
FUSION POWER ASSOCIATES
TO THE
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
OF THE
HOUSE COMMITTEE ON APPROPRIATIONS
APRIL 3, 1990

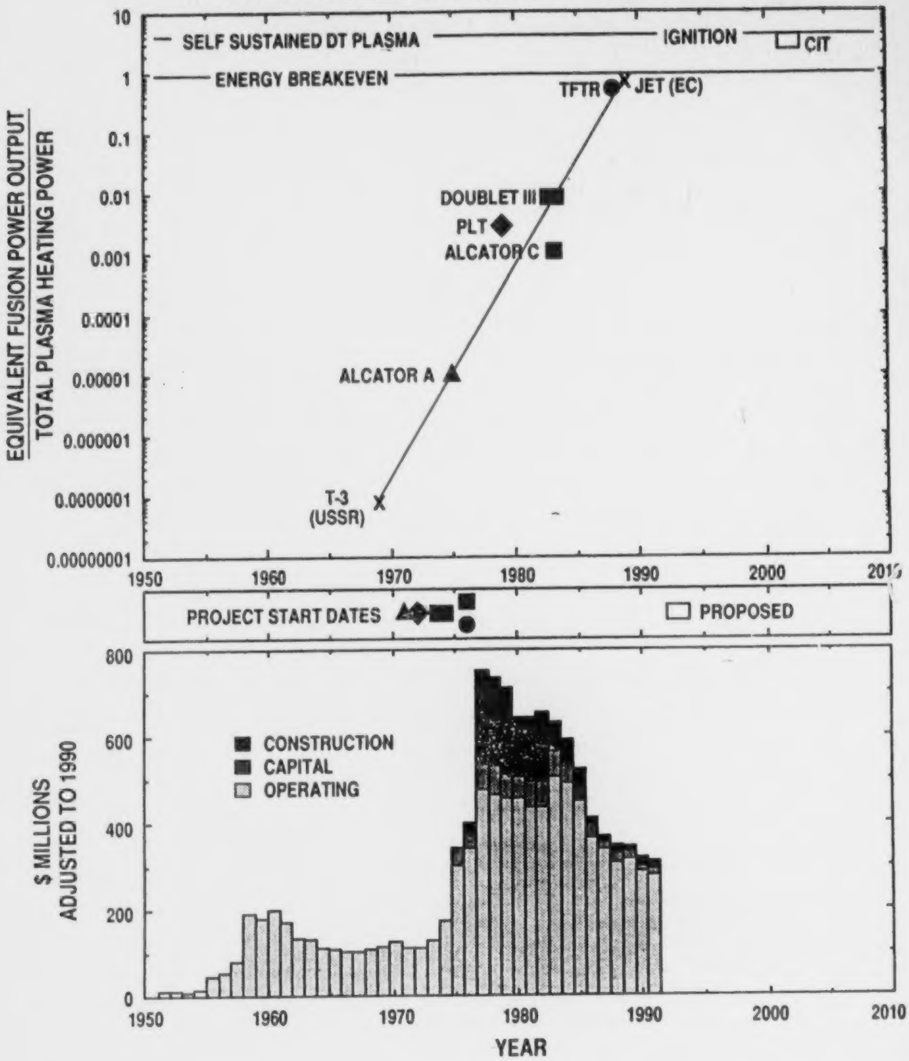
During the past decade the scientific basis has been established for proceeding with the engineering development of practical magnetic fusion power systems. This basis has been verified in a sequence of experiments around the world, most recently the Doublet III and TFTR tokamaks in the United States and the JET tokamak in Europe. This progress has been achieved despite declining budgets during the 1980's, because it was based on the construction of facilities begun in the mid-1970's.

Recently, a unified community plan for proceeding with magnetic fusion development has been prepared. A copy of the executive summary of that plan is attached to my testimony. It provides an orderly path to practical fusion power early in the next century. In order to proceed with this plan, the magnetic fusion budget must recover from the cuts that were inflicted on the program last year, because we are unable to utilize our current facilities efficiently. Therefore, I ask that you not cut the magnetic fusion budget below the President's request of $325M; and I ask that, if possible, you add an additional $25M to restore our current programs to a more healthy level.

I am also here to support the needs of the inertial confinement fusion program which, as you know, is funded primarily in the DOE defense budget. Great progress has been made in that program as certified in the recently-released interim report of the National Academy of Sciences review panel. I ask that you consider raising the budget level of that program to the level recommended by the Academy; that is, to a level of $186M compared to $167M requested by the President.

2 Professional Drive, Suite 248 • Gaithersburg, Maryland 20879 • (301) 258-0545

MAGNETIC FUSION PROGRESS AND BUDGET HISTORY



A Plan for the Development of Magnetic Fusion Energy

March, 1990

The purpose of this plan is to identify a goal and a timely, cost-effective strategy to demonstrate fusion as a viable power source and to enable the US to benefit from its commercialization.

Executive Summary

Fusion energy should be a long-term vital part of the US National Energy Strategy.

Fusion may be the safest and most environmentally acceptable source for meeting future base-load electricity needs.

Fusion fuel supply is widely available and essentially inexhaustible.

Good progress has been made in fusion research towards an energy producing system.

Plasma science advances have improved plasma control and confinement (concept improvement), e.g.:

Plasma pressure limits are well understood; modified configurations of magnetic field are extending these pressure limits.

Non-inductive methods for driving current in the plasma have been developed; agreement between theoretical and experimental efficiency gives confidence in extrapolated performance.

Self-controlling properties of magnetoplasmas have been discovered; this allows larger currents to heat the plasma and may eliminate the need for external heating in some magnetic field configurations.

Advances in fusion technology have been made in superconducting magnets, particle beams and radio frequency energy for plasma heating, control of plasma-wall interactions, tritium processing, development of low-activation radiation-damage resistant materials, etc.

More than a ten-thousand fold improvement of power gain (fusion power output relative to power input to plasma) has been achieved in the past 15 years. Experiments (TFTR and JET) have operated at near-breakeven conditions that would have produced about 10MW of fusion power if tritium had been used.

A short-pulse burning plasma experiment (CIT) is being designed to study the physics and operational behavior of largely self-heated plasmas producing 100 - 500 megawatts of fusion power.

The International Thermonuclear Experimental Reactor (ITER) conceptual design will be complete by the end of 1990. Designed to produce about 1000 megawatts of fusion power, ITER would test long-pulse (over 200 seconds and ultimately steady-state) burning plasmas and develop the technologies required to handle the heat and utilize the neutrons from fusion reactions to breed tritium.

Goal: The goal of the US fusion program is to demonstrate early in the 21st century that fusion is a practical, safe, reliable, and environmentally attractive energy source.

Strategy:
1. Develop plasma-confinement-concept improvements, plasma technologies, and materials needed for practical fusion applications in a core program of science and technology.
2. Construct a burning plasma experiment (CIT) in the US to provide physics information and operating experience for an engineering test reactor, and contribute to the design of a fusion power demonstration facility.
3. Participate in an international engineering test reactor (ITER) to acquire experience with long-pulse burning plasmas and nuclear technologies needed to design a fusion power demonstration facility.
4. Construct a fusion power demonstration facility (DEMO) in the US, which would produce net electric power and provide a basis for fusion commercialization.

This strategy was selected to reduce US cost by use of well-established international collaboration, while retaining for the US the benefits of technological spin-offs and ultimately the commercialization of fusion. To realize these benefits, a strong national program must be maintained with increased involvement of US industry.

Budget and Schedule

The total integrated cost of the US program from its beginning to the operation of a demonstration reactor would be about $36 billion (in 1990 dollars) according to estimates by ERDA in 1976. By comparison $29 billion is estimated here, assuming a more focused plan that relies more heavily on international collaboration. Since about $11 billion (1990 dollars) have been spent by the US through fiscal year 1990, the majority of the investment ($18 billion) remains to be made to meet the goal of fusion power.

To meet a nominal 2020 operational date for a fusion power demonstration facility, the annual budgets need to be increased to about $600 million per year by the mid-1990s, and remain at that level (in 1990 dollars) until construction of the DEMO starts.

David G. Baldwin
Director Institute for Fusion Studies
University of Texas

E. C. Brolin
Acting Director
Princeton Plasma Physics Laboratory

Stephen O. Dean
President
Fusion Power Associates

Alexander J Glass
Alexander Glass
Laboratory Associate Director for Programs
Lawrence Livermore National Laboratory

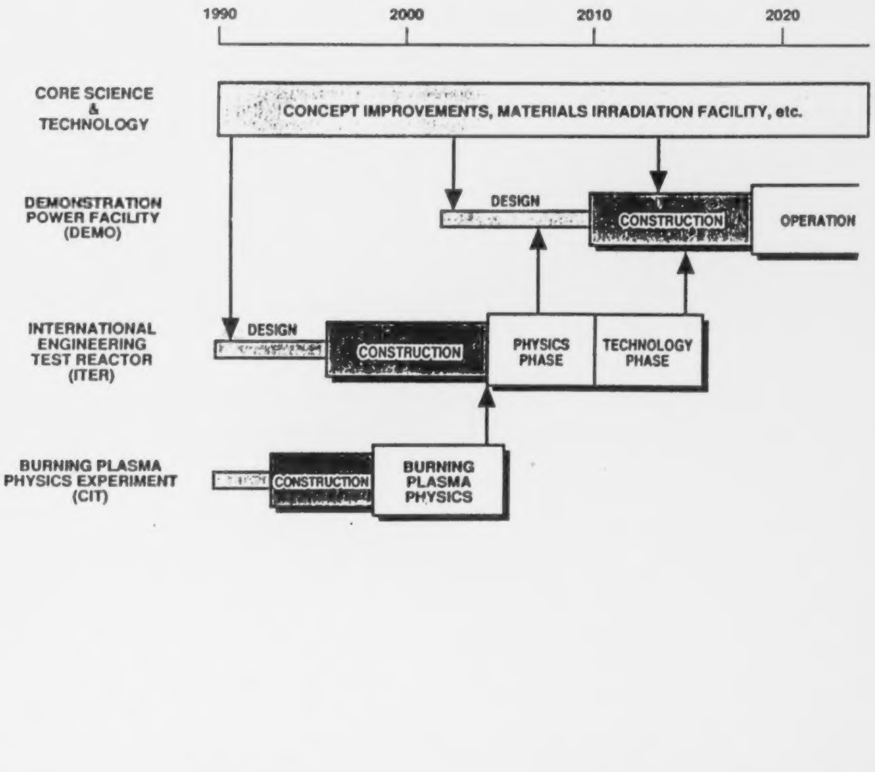
Rulon K. Linford
Magnetic Fusion Energy Program
Director
Los Alamos National Laboratory

David O. Overskei
Sr. Vice President
Fusion Division, General Atomics

Ronald R. Parker
Director Plasma Fusion Center
MIT

John Sheffield.
John Sheffield
Director Magnetic Fusion Energy Division
Oak Ridge National Laboratory

PROPOSED
U.S. FUSION ENERGY PROGRAM


1990
2000
2010
2020
CORE SCIENCE & TECHNOLOGY
CONCEPT IMPROVEMENTS, MATERIALS IRRADIATION FACILITY, etc.
DEMONSTRATION POWER FACILITY (DEMO)
DESIGN
CONSTRUCTION
OPERATION
INTERNATIONAL ENGINEERING TEST REACTOR (ITER)
DESIGN
CONSTRUCTION
PHYSICS PHASE
TECHNOLOGY PHASE
BURNING PLASMA PHYSICS EXPERIMENT (CIT)
CONSTRUCTION
BURNING PLASMA PHYSICS

AGENCY FOR
ADVANCEMENT of *FUSION POWER*, INC.

April 1, 1990

The Honorable Tom Bevill
Chairman
Subcommittee on Energy and Water Development
Committee on Appropriations
U.S. House of Representatives
2302 Rayburn House Office Building
Washington, D.C. 20515

Dear Mr. Bevill:

I am writing to request respectfully that you and your subcommittee members support the addition of $25 million to the 1991 DOE fusion budget. The fusion program is currently underfunded, with critical facilities unable to maintain quality research activities in important areas of fusion science. These include energy confinement experiments and theory; steady-state curent-drive experiments; tokamak configuration optimization experiments; and work supporting a short-pulse D-T burning plasma experiment.

While the Secretary Watkins' Fusion Policy Advisory Committee performs its review of the fusion program over the next several months, the fusion program must not be allowed to deteriorate further into its subcritical capability. This would result in a wasteful use of the investment Congress has placed in the program to date and an inefficient ramp-up of the development program next year.

Every review ever performed of the fusion program has praised its quality of work and remarkable progress. The misguided personal opinions of one man, namely Dr. Robert Hunter, should not be seized upon as a credible assessment of the quality of the fusion program. I am confident, fusion administrators are confident, fusion scientists are confident, and fusion industry is confident, that the Fusion Policy Advisory Committee will recommend strengthening and accelerating fusion science and technology development. In the meanwhile, fusion should be funded to maintain a healthy holding pattern. It needs $25 million to do this.

Thank you for watching out for this program, which is so vital to the nation's future. Please include this letter and its attachment in the record of your April 3 hearing.

Sincerely,

George S. Clemens

George S. Clemens
President

Attachment

P.O. BOX 8601 • NORTHFIELD, IL 60093 • (312) 446-5492

AGENCY FOR
ADVANCEMENT of *FUSION POWER*, INC.

THE FUSION IMPERATIVE

Statement for the Record
Prepared for the Subcommittee on Energy and Water Development
Committee on Appropriations
U.S. House of Representatives
by
George S. Clemens
President
Agency for Advancement of Fusion Power
April 3, 1990

The Earth's future is threatened by the release of greenhouse gases into the atmosphere. Scientists may not agree on the magnitude and time frame of the climatic changes global warming will cause, but they do believe that these changes will occur and that they will be severe. Research will eventually resolve the current scientific uncertainties, but we must begin now to prepare for the worst, because there will not be time enough to respond if we wait to discover that the more dire predictions are the correct ones.

This country will need non-fossil, central-station power options soon -- by at least 2010 -- to replace existing fossil-fuel-burning plants, to meet increasing electricity demand, and to process hydrogen for transportation fuel. In addition, the U.S. and the other industrialized nations will have the responsibility of transferring this technology to developing nations that, with their growing populations and industrializing economies, will otherwise utilize their vast reserves of carbon fuels.

I am convinced that fusion is the most viable of our future central-station power supply options. I support the development of solar and fission, but both of these technologies have potentially critical vulnerabilities. For instance, what if photovoltaics cannot satisfactorily solve its problems concerning intermittency and transmission? What if public opposition to fission plants discourages utilities from constructing more?

Energy efficiency and conservation alone cannot provide a complete solution. Nor can we play Russian Roulette for the future of the human race buy constructing another generation of fossil-fuel-burning power plants. The EPA has predicted a number of disastrous ecological changes based on CO_2 doubling by 2040; and we are being told that we must learn to adapt to them. Since atmospheric CO_2 and methane continue to increase exponentially, why not make realistic predictions based on CO_2 tripling and methane quadrupling by 2080? Prodigious amounts of methane are produced by natural sources, such as the cultivation of rice paddies and the raising of ruminant animals; this production will be exacerbated by the doubling of the human population by 2050. The extreme difficulty in controlling natural methane emissions renders it all the more critical to reduce those emissions that we can regulate: such as CO_2 emissions from burning fossil fuels; and methane emissions from the production and transportation of natural gas and the burning of biomass.

This country must be prepared for all eventualities, which include needing to deploy non-fossil central station power technologies like fusion urgently within the next twenty years. The program is ready for this kind of engineering development. Breakeven was just effectively reached on JET; a stunning achievement that tops off two decades of remarkable progress.

This remarkable progress has brought the program to engineering development readiness, and proved that the money invested to achieve this progress was well spent. However, much engineering and research lies ahead in order to furnish the final product: a demonstration fusion power pilot plant. We must start now on a mission-oriented development program in order to have fusion in place by the key years of 2005 or 2010.

In every endeavor, there are the meek and the mighty, the conservatives and the visionaries. This nation was built by visionary men and women who were willing to forge ahead to solve long-term, challenging problems. Developing vital future energy sources is just such a problem, yet the U.S. seems to be asleep at the wheel on this issue. We must wake up! The Japanese and the Europeans are acting while America drags its feet.

I believe that a fast-track fusion development program can be done successfully. It must begin now. Fusion is imperative to our nation's security, and perhaps, to the very future of mankind.

Mr. **Bevill**. Thank you for your fine presentation.

Tell Dr. Dean we missed him and we are sorry that he couldn't come, but we are glad you substituted for him.

Ms. **Kincaid**. He said he would be glad to respond to answer questions you have in the mail.

TUESDAY, APRIL 3, 1990.

NUCLEAR REACTOR R&D PROGRAMS

WITNESS

DAVID M. YANNITELL, MANAGER, NUCLEAR ENERGY PROGRAMS, GENERAL ELECTRIC CO.

Mr. **Bevill**. Next we have Mr. David Yannitell.

Mr. **Yannitell**. I am David Yannitell, the Manager of Nuclear Energy Projects for General Electric Nuclear Energy. I greatly appreciate the opportunity to testify before you today and highlight testimony by Bertiam Wolfe on the civilian nuclear energy option.

The issue before us now is whether the path to new nuclear energy installations will be cleared in the forthcoming era to help meet the new power needs.

Over the past 15 years the U.S. has developed institutional impediments that could prevent the rebirth of nuclear energy even with a vital need. Fortunately, there are some positive happenings that indicate an opportunity for nuclear energy to grow if required in the U.S. and to play a role in our energy strategy.

For example, the Industry-DOE Advanced Boiling Water Reactor (ABWR) Certification Program can provide early proof that we have the institutional means to enjoy the benefits of safe nuclear power, and serves as a forerunner to all other advanced reactor development.

The program has recently experienced some minor perturbations, but we believe the NRC will retain their schedule for a 1991–1992 regulatory certification of this enhanced standardized ABWR design.

Similarly, the Industry-DOE mid-size ALWR program to design and certify to smaller plants, which utilize simpler and more passive features for enhanced safety while maintaining competitive economics, is focused on near term (1995) program results and requires only modest resources, with significant private-sector cost sharing from the GE and Westinghouse teams.

Both these ALWR programs are included in DOE's 1991 budget request at funding levels consistent with the program objectives and deserve continued support.

The revival of the nuclear option in the U.S. and its widespread use throughout the world raises the issue of the long term future of nuclear energy because light water reactor (and HTGR) systems rely on the economic availability of a finite resource, uranium.

Although there appears to be sufficient uranium to supply such thermal reactors for some time, the long term promise of energy security through nuclear energy is the essentially unlimited energy supply through the Advanced Liquid Metal Reactor (ALMR).

While this capability alone justifies continued, timely development of the ALMR, current studies show a potential nearer term benefit in the form of enhanced nuclear waste management.

This is because the ALMR has the fuel recycle capability to eliminate the long-life high level actinides of its own waste stream, and may be further utilized to similarly burn long life actinides from the discharged fuel of the water reactors.

This does not reduce the need for a repository but could reduce the high-level waste storage requirement in a respository from millions of years to hundreds of years. However, neither of these advantages are achieved without support to the ALMR design and technology programs.

Unfortunately, the current DOE national program for the ALMR, which has focused the industrial design and licensing effort in a cost shared national program, is insufficiently and inconsistently funded. The combined DOE budget of $4 million in 1990 and $5.0 million in 1991 is only 30 percent of contract levels and is insufficient to achieve the program objectives. Similarly, the supporting technology at the National Laboratories is under funded in the DOE 1991 budget.

I mentioned that this is a cost-shared national program. We put together an industrial team that committed itself through contractual agreements with DOE. We, industry, has not backed away from our commitment; hgwever, it becomes increasingly difficult to "stay the course" when our commitments become one-sided.

We also lose our international credibility and our role as technology leaders and jeopardize the positive balance of trade in one more area of U.S. advanced technology development.

The program needs balanced and consistent support to jointly develop the ALMR with the National Laboratories. Argonne is moving ahead with its metal fuel program and Oak Ridge and Westinghouse Hanford respectively are working on advanced control systems and LWR spent fuel reprocessing technology for recycle of long-lived actinides.

The industrial participation with a design and license focus provides the means for "end use" deployment essential in this national effort if the benefits of this research and development are to see a timely technology transfer to civilian use. We have developed a reasonable recovery plan with DOE to get back on track which will require at least $12 million for the industrial design effort in fiscal year 1991.

Your support in restoring the funding to this program level from the current DOE level of $5 million is requested.

In summary, we believe a U.S. national energy policy should recognize that the demand for electricity will continue to grow. Nuclear energy will be a vital factor in assuring future U.S. and world energy security. Under the circumstances, it is only prudent that we take consistent steps necessary to allow the expanded use of nuclear energy if needed for national and world welfare and that the United States be in a leadership position.

I appreciate the opportunity to testify before you on this vital subject and welcome the opportunity to respond to questions.

[The information follows:]

TESTIMONY OF

BERTRAM WOLFE
VICE PRESIDENT AND GENERAL MANAGER
NUCLEAR ENERGY OPERATION
GENERAL ELECTRIC COMPANY

ON

CIVILIAN REACTOR RESEARCH AND DEVELOPMENT PROGRAMS

BEFORE THE
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
HOUSE COMMITTEE ON APPROPRIATIONS

APRIL 3, 1990

My name is Bertram Wolfe, and I am Vice President and General Manager of General Electric's Nuclear Energy Operation. I have been actively involved in the research, development and application of nuclear power generation for over 30 years. I am a past president of the American Nuclear Society, a member of the National Academy of Engineering and am on the board of several industry organizations in the nuclear energy field. I greatly appreciate the opportunity to testify before you today on energy research and development, particularly as it pertains to the civilian nuclear energy option.

I respectfully request your continued support at the requested levels for the following areas of the Civilian Reactor Development Program.

> 1. There is recognition in both industry and the Nuclear Regulatory Commission that the development of preapproved standardized plants is needed. To this end, the program for the certification of GE's Advanced Boiling Water Reactor (ABWR) should maintain its 1991-1992 completion target.
>
> 2. The present LWR'S and the ABWR are large plants of 1000 MWe and beyond; it will be advantageous in the near future to economically be able to deploy advanced nuclear energy plants in increments of 500-600 MWe. The Electric Power Research Institute and the Department of Energy have initiated a design and licensing program that is aimed at the certification of such smaller plants by 1995. This focused and significantly cost shared program deserves continued Congressional support.

I respectfully request your increasing the support for the ALMR design and licensing program in FY 1991 to $15 million, or a $10 million increase over the DOE request of $5 million.

> The utilization of the Advanced Liquid Metal Reactor (ALMR) to provide an essentially unlimited energy supply through breeding new fuel while simultaneously "burning" the long-life radioactive actinides that are the residual waste in spent fuels from LWRs may be essential sometime in the next century. Our national energy policy should include its timely development and demonstration. Unfortunately, current funding difficulties for this program, if continued, could pass leadership from the U.S. to overseas nations. We need congressional support to restore the design and licensing funding to program levels so we can maintain its viability and momentum while continuing the required technical support at the National Laboratories.

The five year cost sharing DOE contract signed with industry in January of 1989 called for $30 million in 1990 and 1991 to accomplish the design and licensing objectives as planned. The combined DOE budget of $9 million in 1990 and in 1991 is insufficient to achieve the program objectives which were committed to. We have developed a reasonable recovery plan with DOE to get back on track which will require $15 million for this effort in FY 1991.

The U.S. has been a leader in nuclear energy technology over the last 40 years, and I believe nuclear energy can and should play an expanded role in providing safe, economical energy security for the future while minimizing the impact on the environment.

If we look back to the history of peaceful nuclear energy from its inceptions under President Eisenhower's Atoms for Peace program for nonproliferation reasons, we can explain the difficult start of nuclear power by the lack of need for it in the fifties and early sixties. The growth of nuclear energy in the sixties and early seventies was encouraged by the need for new electrical capacity and the increasing costs of, and public reaction to, pollution by fossil plants. The lack of nuclear commitments in the post oil embargo period (after 1974) can again be explained by lack of need due to prior over commitment of new coal and nuclear plants relative to the reduced growth rate of power demand after the embargo. In contrast, in France, which had few indigenous fuel resources and had an electric supply system almost completely dependent upon imported oil, the Arab oil boycott emphasized the need to become less dependent on oil and led to a massive expansion of nuclear energy. Nuclear power now provides some 80% of France's total electrical generation. In Japan, also with few indigenous energy supplies and also heavily dependent on imported oil, the boycott led to a diversification of energy sources in which nuclear energy has played a major role.

In the United States, as our economy grows, we are steadily becoming more electricity intensive, but there are now indications that our generation capacity is not keeping up with this growth of electricity use. Electrical demand in the U.S. has risen by over 20 percent since 1983 and some parts of the country are approaching the limits of their generating capacity. Since the summer of 1988, for the first time in the past two decades, we have had electrical shortages in some areas, and without new capacity this shortage is expected to exacerbate. In fact, there are estimates of need of 100-200 GWe of new capacity for the next decade, the equivalent of 100 to 200 large (1000MWe) power stations, each of which could supply a city of over a half-million people.

Increased efficiency, conservation, and the use of renewable energy resources such as solar and wind power will all help satisfy the need for new electricity supplies, but will fall far short of meeting even the near term demand if the aforementioned added need of 100-200 GigaWatts of electricity in the coming decade is born out.

The only two major supply alternatives now available are coal and nuclear energy. However with growing concern about the "greenhouse effect" from burning fossil fuels, we may find ourselves in a situation where nuclear energy is the only practical means to satisfy expanded electrical use. On a global basis with increasing needs of the developing nations, this may be particularly so.

The issue before us now is whether the path to new nuclear energy installations will be cleared in the forthcoming era to help meet the new power needs. Over the past 15 years the U.S. has developed institutional impediments that could prevent the rebirth of nuclear energy even with a vital need. Fortunately, there are some positive happenings that indicate an opportunity for nuclear energy to grow if needed in the U.S. and to play a role in our energy strategy.

First, there is recognition in both industry and the Nuclear Regulatory Commission that the development of preapproved standardized plants is needed. To this end, a program for the certification of GE's Advanced Boiling Water Reactor (ABWR) is moving ahead with a 1991-1992 completion target. This program, which is a joint effort among GE, EPRI and the Department of Energy, continues on schedule but is currently being impacted by a number of unresolved policy issues within the NRC. We are working with the Commissioners and Staff to minimize this impact.

Secondly, new NRC regulations are expected to be finalized to establish ground rules and regulatory procedures for construction of a certified plant. With such certification, in principal, plants in the U.S. should be constructed in the four-to-six year time scale, regularly achieved overseas, instead of the ten to fifteen year periods and longer which have been characteristic here. This will provide improved confidence in costs and schedules.

Third, as indicated earlier, the need for new electrical power supplies and concerns over the environmental effects of fossil fuel burning - acid rain and the greenhouse effect - are leading the public to view nuclear energy in more realistic perspective than in the past.

Finally, one should note that the development and deployment of improved nuclear plants is important to our U.S. foreign policy. The success of the U.S. nonproliferation policy in the past was due to our technical leadership that allowed us to constructively influence worldwide nuclear energy development and use in peaceful directions.

This is further borne out by observing that our current advanced reactor efforts are once again capturing the imaginations of our international partners. Our approach is considered fresh and responsive in moving to meet the expectations of our citizens over the safe use of nuclear energy. Thus we can be viewed in a new light, as a nation who is doing something to resolve our near term power growth requirements while focusing on the energy security needs of our citizens in the 21st century.

This favorable image of social and technological leadership is helping us immensely in obtaining international support for such joint industrial projects as the ALWR and ALMR programs. The real payoff however is our continuing the current favorable Balance of Trade in nuclear energy.

If we hope to continue such leadership, we must provide consistent support to these key programs aimed at timely advanced nuclear energy plant development and build upon the excellent results in these programs to date. Otherwise the U.S. will send a message to the world that it is giving up its nuclear energy leadership role.

The present LWR'S and the ABWR are large plants of 1000 MWe and beyond. This type of nuclear power system has a successful 30-year experience base, and on-going technical developments leading to advanced light water reactors will improve on reliability, safety and performance. I believe it will also be advantageous in the near future to economically be able to deploy advanced nuclear energy plants in increments of 500-600 MWe. Such designs should not only benefit from existing advanced light water technology but will also require and benefit from enhanced features such as simpler, more passive safety features and natural coolant circulation which help offset the diseconomy of scale affecting such midsize systems. To this end the Electric Power Research Institute and the Department of Energy, with Congressional support, have initiated a design and licensing program that is aimed at the certification of these smaller plants by 1995. Results to-date have been very positive and support from international organizations has been integrated into the program.

As noted above, the light water reactor (LWR) is clearly the technology of choice for the near term. It has received extensive development and has a well established 30 year industrial infrastructure and experience base. However, the revival of the LWR in the U.S. and its widespread use throughout the world raises the issue of the long term future of nuclear energy because LWR systems rely on the economic availability of a finite resource, uranium. Although there appears to be sufficient uranium to supply LWRs for some time, the long term promise of energy security through nuclear energy is an essentially unlimited energy supply through the Advanced Liquid Metal Reactor (ALMR), and our national energy policy should include its timely development and demonstration. The ALMR is unique in that it can be made to manufacture (or breed) substantially more fissile material than it consumes. This can be done by converting the 99% non-fissile portion of uranium into fissile material. The utilization of this capability of modern ALMRs to breed may be essential sometime in the next century as the growth in nuclear energy generation using light water reactors or other non-breeding reactors consumes the currently abundant fissile uranium supply.

This prospect alone justifies timely development of the ALMR; but the ALMR is also unique in that it has the potential capability of utilizing as fuel the long-life radioactive actinides that are the residual waste in spent fuels from LWRs. This capability provides a means for converting extremely long-life actinide radioactive wastes, materials with lifetimes on the order of a million years, to elements whose lifetimes and thus storage needs are much shorter, namely hundreds of years. This would clearly focus on a controversial aspect of the nuclear option. While it does not change the need for a geological repository, it changes in a dramatic way the period required for safe storage of nuclear wastes.

The current DOE program for development of a commercially deployable ALMR is based upon the PRISM concept, initiated by GE in 1981. This development program is supported by an industrial team comprised of General Electric, Westinghouse, Bechtel, Burns & Roe, United Engineers and Constructors, and Babcock and Wilcox, with extensive technology support from the National Laboratories such as Argonne National Laboratory, Oak Ridge and Westinghouse Hanford. This concept also has attracted the attention of international programs and collaborative efforts have already been initiated which count on the ongoing U.S. ALMR design and licensing program. Unfortunately, current funding difficulties for this program, if continued, could pass leadership from the U.S. to overseas nations. We need congressional support to restore the design and licensing funding to program levels so we can maintain its viability and momentum while continuing the required technical support at the National Laboratories.

In summary, I believe a U.S. national energy policy should recognize that the demand for electricity will continue to grow; that the world petroleum problem over the long term is apt to get worse; and that because of the greenhouse effect and other environmental problems we may not be able to rely on fossil fuels as the predominant source of new energy supplies. Nuclear energy will be a vital factor in assuring future U.S. and world energy security.

I believe there are three basic elements for a successful future national nuclear energy program. First, the near term maintenance of the nuclear option should be pursued through efforts leading to the regulatory certification of standardized advanced LWR designs and the demonstration of acceptable construction schedules and costs. Second, we must get on with a successful waste disposal program, including a geological repository which will have the dual effect of aiding in the public acceptance of nuclear energy and again demonstrating and exerting U.S. international leadership.

And finally, for the longer term and for continued international leadership, I believe that the benefits derived from the development of the ALMR justify proceeding on a path that will provide a certified reactor system and fuel cycle demonstration around the turn of the century. This will permit the achievement of technical readiness through a careful and timely development of the ALMR and its closed fuel cycle system inclusive of actinide burning, before its needed, not after.

I appreciate the opportunity to testify before you on this vital subject and welcome the opportunity to respond to questions.

TUESDAY, APRIL 3, 1990.

MODULAR HIGH TEMPERATURE GAS COOLED REACTOR AND MAGNETIC FUSION

WITNESSES

LINDEN BLUE, VICE CHAIRMAN, GENERAL ATOMICS

NORVAL E. CAREY, SENIOR VICE PRESIDENT, GOVERNMENT OPERATIONS, GENERAL ATOMICS

Mr. BEVILL. Next is our friend Mr. Linden Blue and Norval Carey.

Mr. BLUE. We want to talk about fission, fusion and space power from thermionic fuel elements. It has been a good year for all three of those technologies.

In the fission area I think you are seeing the decisions that have been made in the past are looking more logical than ever before. For the new production reactor, in an era where peace is hopefully breaking out, it is important to have a reactor with versatility. The modular HTGR gives the versatility of being able to produce either electricity or tritium, a very sound investment for the nation and we are pleased that the conceptual design work is going to be completed this month.

You will hear from Ed Van Brunt of our organization on that subject.

On the civilian side, as we have seen the desperate energy needs in the Eastern Europe, the ability to have a reactor that can not only produce electricity but process heat, distribute heating and desalinate water is very important.

In an area like Poland where we have a desperate need for more energy and almost insolvable environmental problems where the air literally is almost too heavy with the pollutants from burning coal to breath, it is extremely important for them to have an option of perhaps a technology even that can clean up the coal. That is the promise of the HTGR.

The combination of those two programs is a good one. There is no overlap in the two. The funding for both the new production reactor and the civilian program should proceed as the development has recommended.

In the fusion area, we have made excellent progress this year. The beta factor, which is one of the efficiency factors, increased 50 percent just in this past year. At Princeton they have been doing excellent work.

They have sustained temperatures of 300 million degrees. They are able to produce about 40 kilowatts of power. At our D-IIID Tokamak, we have raised efficiency of the beta factor by 50 percent.

We have been able to sustain and confine the plasmas, we were the first to do it for five seconds. Now we are up to 10 seconds. When you compare that to a few years ago, I came in and told you how great it was and we were able to do a quarter of a second. That didn't sound too impressive. Compared to what we are doing now, progress is good and steady.

The important thing on fusion, the nation is reaping the benefits of this technology as we go along. Plasma physics has been important in industrial processes, particularly in the microcircuit technologies and such things as magnetic resonance imaging. Anybody who is about to have an exploratory operation would really appreciate the potential for magnetic resonance imaging and not having to have exploratory surgery.

On fusion, we believe the U.S. program combined with the international program called ITER is a critical way to make this happen. The combined efforts of Europe, the Soviet Union, Japan and the United States will make fusion a reality and we believe in the first quarter of the next century.

On the thermionic fuel elements space power, the Air Force is recognizing the desirability of the 5 to 40 megawatt, kilowatt range, the importance of small compact and survivable space power. This is the kind of space power that people can't object to because there isn't any radiation on launch.

It goes into an orbit that can't have a reentry during any time there would be radioactivity. In this area the funding is light. There should be an addition of $14 million.

The confirmatory programs are going well. We confirmed a life of two years. By 1993 we believe that will be up to seven years, which is the objective. That is all going well.

All three of these programs, we believe, are very important investments in the future of economic security and military security for the United States.

Thank you.

[The statement of Mr. Blue follows:]

Linden Blue
Vice Chairman

of

General Atomics
San Diego, California

before the

Energy & Water Development
Subcommittee

of the

House Committee on Appropriations

FY'91 DOE Appropriation

April 3, 1990

Mr. Chairman and Committee Members:

I am Linden Blue, Vice Chairman of General Atomics (GA). We at GA are extremely proud to be partners with the U.S. government in developing several of the world's most promising new energy sources, including tailoring them for specific commercial and defense applications. We have been working closely with the Department of Energy (DOE) on the civilian Modular High Temperature Gas-Cooled Reactor (MHTGR) program and are encouraged by recent interactions with various utilities, our commercial partners, and governmental representatives. The New Production Reactor (NPR) program under which DOE plans to build four MHTGR modules for tritium production will also provide a major technological boost to the civilian program. These two complementary programs are being coordinated to ensure timely deployment and to avoid duplication. I strongly support the budgets as requested by the Administration for both the MHTGR and NPR programs.

Magnetic fusion is a more long-term solution to our energy needs. It still requires significant development but when the enormous future potential is combined with the current value of the continuing technological spin-offs, the fusion program is an economic and environmental imperative. I recommend a modest increase in funding for Magnetic Fusion to restore it to the FY'89 level. This increase will support participation in the cost-effective international fusion device collaboration, ITER, and will also allow the U.S. to fully exploit the facilities we have already constructed.

GA is also developing small thermionic reactors which are designed to power surveillance satellites and which could also provide the level of power required for future space stations. While recent political changes have hopefully reduced our need for some weapons systems, these same changes may have increased the value of an improved non-intrusive surveillance capability. To maintain the timely development of this capability, I recommend an increase in the thermionic space power program which is included in the multimegawatt line item.

My specific FY'91 budget recommendations are:

•	Modular High Temperature Gas-Cooled Reactor	$ 25M
•	New Production Reactor	$363M
•	Magnetic Fusion Development	$350M
•	Thermionic Program (Multimegawatt Line Item)	$ 16M

Each of these programs is a prudent investment in our economic or military security. Three of the four will contribute directly to both.

MHTGR Benefits & Progress

In spite of the economic and public acceptance obstacles encountered by commercial nuclear power, the current generation of reactors has made a substantial contribution to the economy, environment, and energy security of the U.S. But with no new orders for over 15 years, preservation of the nuclear contribution requires the availability of new, more advanced reactors which have a simpler, more transparent safety philosophy and which are therefore less subject to costly regulatory, QA, and construction problems. By utilizing a non-corrosive, single-phase coolant and refractory core components in a small, low power density configuration, the MHTGR eliminates the need for complex engineered safety systems; resulting in a "meltdown-proof" reactor. The radionuclides will be contained within the coated particle fuel, even in severe accident scenarios. The MHTGR offers the environmental benefits of nuclear energy (including the type of reduction in atmosphere pollution required under the Clean Air Act) from a cost effective, ultrasafe advanced reactor. Nuclear energy must be an important component of our National Energy Strategy. By combining the MHTGR with an effective radioactive waste program and licensing reform, nuclear energy can be credibly projected as a future source of process heat for industry as well as a continuing electrical generation resource.

During 1989, design progress under DOE's MHTGR program continued with all scheduled milestones completed. The Nuclear Regulatory Commission (NRC) issued the Draft Safety Evaluation Report which acknowledged the potential safety advantages of the MHTGR. While policy issues associated with the lack of (a technical need for) a conventional containment structure remain open, a trade-off study addressing these issues was completed. From a technical viewpoint, it has been shown that the reference design without a conventional containment meets, with large margins, all safety requirements. The study also indicated a substantial cost penalty and negligible increase in the safety margins resulting from the incorporation of a more conventional, structural, containment. The NRC is currently reviewing this trade-off study and we expect further guidance later in the year.

In 1989 we also released the results of a joint study with the Metropolitan Water District of Southern California. This study presented an MHTGR cogeneration facility design in which a four-module facility would produce electricity and desalinated (fresh) water for approximately a half-million people. The associated economic evaluation projected that such a facility could be cost competitive with other sources of new water in this region of the country.

The initial facility feasibility study which is being completed by Consumers Power, Bechtel, Siemens, Gas-Cooled Reactor Associates, GA and DOE defines a reasonable government/private cost-sharing collaboration which could result in start-up of an initial civilian MHTGR facility in approximately 2000. The study, which will be issued shortly, has been encouraging and represents a step toward integrating user, vendor, and government interest in commercial deployment of the MHTGR in the U.S. Subsequently, I expect a substantial international market, particularly in the developing countries.

In conjunction with the proposed MHTGR-NPR funding, the $25M requested for FY'91 by the Administration will maintain the interest and momentum of the civilian MHTGR program.

MHTGR-New Production Reactor

The DOE's Office of New Production Reactors kicked off the design effort on the four unit MHTGR-NPR in December of 1989 with the issuance of a multi-year, multi-phase contract to CEGA, a corporation owned jointly by Combustion Engineering and General Atomics. The MHTGR-NPR conceptual design will be completed in April of this year. The program will then proceed into preliminary design and we expect to reach a stage of design equivalent to the civilian program in less than 12 months. The current reference schedule projects operation of the first unit of the MHTGR-NPR in the late 1990's. As I noted previously, the initial commercial facility should be in operation shortly thereafter.

Today the basic characteristics of the MHTGR look even better matched to the NPR application than when the original announcement of its selection as a part of the DOE program was made in mid-1988. With the dramatic changes in international relationships and the resulting potential for important reductions in nuclear materials requirements, it becomes more important that new production facilities be adaptable. The MHTGR-NPR assures an energy production and technological benefit from the national investment, regardless of future defense materials requirements.

Completion of the MHTGR-NPR will permit the transfer of technology and a large amount of specific system and component design, as well as first-of-a-kind fabrication technology to the civilian program. The NPR will require the utilization of highly enriched fuel for efficient tritium production, but most other major components will be compatible with the commercial MHTGR. There is every incentive to ensure that the pressure vessels, steam generators, reactor internals, control rods, circulators, and most other non-fuel components are interchangeable between the MHTGR-NPR and its commercial successor. The multiple (defense and commercial) benefits of a portion of the NPR expenditures are an important consideration in light of the growing budget pressures.

I support the Administration's NPR program and its decision to proceed with dual reactor technologies. The FY'91 budget request of $363M will help assure an appropriate future supply of tritium and other strategic special nuclear materials.

Magnetic Fusion Energy Development

Fusion energy has the potential of playing a major role in the long term energy security of this country. With continued support, controlled fusion will result in an environmentally acceptable large-scale energy production system in the early part of the 21st century.

GA has been a long-standing participant in the continued development of fusion energy. We are proud of being the largest industrial participant with over 260 scientific, technical, and support personnel. Under contract to the U.S. Department of Energy, GA has designed, assembled, and now operates the DIII-D experimental tokamak device, which is the second largest U.S. tokamak and one of the most productive in the world. In addition to doing contract research for the U.S. Department of Energy we have invested in excess of $10 million of our own funds in the development of fusion energy, materials, and confinement systems.

GA and the other participants in the U.S. fusion program, have made tremendous progress in the past several years. The major experimental devices all produce fusion reactions on a regular and predictable basis. The TFTR device at Princeton University has achieved or exceeded most of its performance expectations. At present the TFTR has a temperature of 300 million degrees and routinely produces 40 kW of power from fusion reactions.

Research at the DIII-D tokamak at GA has focussed on maximizing the plasma pressure that can be confined by a given magnetic field. This high plasma pressure is critical for optimizing the performance-to-cost-ratio of future fusion devices. In fact, we have been able to increase this parameter, called beta, by 50% in the past year alone and we anticipate continued improvements in the future. Our ability to sustain these high performance plasmas has been extended significantly in the last year, with the DIII-D device being the first in the world to demonstrate a high quality of plasma confinement for a period of five seconds. More recently we have doubled that capability up to 10 seconds. Further progress is well within the scope of the machine and is limited only by the amount of operating funds available for the experiment.

Fusion research has yielded important scientific and technology advances that have enhanced the U.S. competitiveness in a number of areas. For example, magnetic fusion research has developed numerous plasma processing techniques which have been instrumental in the semiconductor industry. Superconducting magnet technology, which was developed by the magnetic fusion program, enabled large scale industrial production of magnetic resonance imaging systems used routinely as a medical diagnostic. This technology has also resulted in high energy physics experiments and magnetically levitated trains. Advanced high power microwave systems necessary to diagnose, heat, and control high temperature fusion plasmas developed by the fusion program are finding numerous applications in defense, ceramics processing, and communications. This is but a mere sampling of the high technology spin-offs that have resulted from the fusion research to date.

These remarkable scientific and technological advances put us on the threshold of a new opportunity. The dream of controlled fusion producing electricity in the first quarter of the 21st century can only be attained with the continued commitment on the part of this government and its congressional leaders. Realization of this goal will require a strong national program and continued participation in the large scale international cooperation that has already been initiated through the ITER process. The ITER device is currently being jointly designed by the U.S., Soviet Union, European community, and Japan. The purpose of this device is to demonstrate the scientific and technological feasibility of fusion power. The cost of this demonstration facility will most likely be beyond a level that any one of the participants would fund independently. But by working together with our foreign partners we will be able to achieve the results more quickly and have access to the technological advances that the Soviet Union, Europe, and Japan will bring to the process.

For the U.S. to participate meaningfully, however, we must sustain an aggressive and productive national fusion research effort. In the past the U.S. was in a strong leadership role with regards to fusion research. We now, however, find that our foreign partners have fusion programs that are far more ambitious and aggressive than the programs currently in place in the U.S. International cooperation and personnel exchanges are certainly valuable in this regard. At GA, we have made a concerted effort to interact with numerous other national labs, universities, and foreign collaborators to bring the maximum technological benefits to the U.S.-funded fusion research program. We have active collaborations with the Soviet Union, six European programs, and a major collaboration with Japan. However, we must go beyond these small-scale technical exchanges if we are to maintain our U.S. leadership position.

Failure to participate in ITER will ultimately result in the loss of technological and scientific benefits to U.S. industry and consequently, a decline in U.S. industrial competitiveness. In order to maintain a strong position, I emphatically urge the Congress to support the ITER process and encourage the U.S. to continue to participate in the engineering design activity and ultimate construction of an ITER device.

In summary, the U.S. fusion program represents U.S. scientific research and development at it finest. Not only are we developing a new energy alternative, but we are pushing back the frontiers of plasma science and contributing significantly to the development of new technologies in the areas of superconductivity, high power microwaves, plasma processing for semiconductors, new materials, accelerator technology, and supercomputing computational science. With these advances we continue to keep America on the technological edge while realizing the ultimate promise of controlled fusion power.

I urge you to consider funding the U.S. magnetic fusion research program at a level of $350 million for fiscal 1991. This level is the minimum necessary to support U.S. participation in the ITER process while still fully utilizing the major U.S. magnetic fusion facilities such as the DIII-D facility at GA that are already in place, but at present are operating at less than half of their potential capacity.

Thermionic Power Conversion Technology for Space Applications

Thermionic power conversion technology converts heat directly to electricity through the process of thermionic emission. The Thermionic Fuel Element (TFE) Verification Program was begun in 1986 by SDIO and DOE to demonstrate that thermionic fuel elements can meet lifetime and performance requirements for electric power for space applications. The TFE Verification Program builds on an extensive database generated by AEC/NASA programs in the 1960s and 1970s. Contractors are General Atomics, Thermo Electron Technologies, Rasor Associates and Space Power, Inc. Los Alamos provides technical oversight and ORNL will play an increasing role in materials development and instrumentation. Westinghouse Hanford Company conducts the irradiation testing in the FFTF and EBR-II. Results from test programs underway in FFTF at Hanford, EBR-II in Idaho and the TRIGA reactor at GA have been very favorable: a recent governmental evaluation concluded that a lifetime of two years had been verified, and that by 1993 a seven year life capability of the TFE can be established. The USSR recently orbited two 10 kW thermionic systems.

Over the last 12 months, Air Force interest in small, compact, survivable power sources below 100 kW(e) for surveillance and communications missions has greatly increased. Surveillance, communication and navigation are space missions that will become increasingly important in a rapidly changing world. Only thermionic systems score well against all performance goals that have been identified by the Air Force. For FY-90, Congress in the Defense Appropriations bill provided $10 million to the USAF to begin work on thermionic systems.

The TFE Verification Program is successful and cost effective in spite of budgetary oscillations. Over 35,000 hours of real time testing have been achieved on emitters in TRIGA, and the results are validating analytical models. The equivalent operating time of the accelerated emitter tests in EBR-II is over 40,000 hours, and the results show that emitter distortion is less than expected. Insulator lifetime tests in TRIGA, FFTF and EBR-II indicate that alumina can meet lifetime requirements. Three one-cell TFEs are currently operating as designed in TRIGA; one has over 11,000 hours of operation, a second has over 3000, and the third has nearly 500 hours. Three more TFEs will begin tests in 1990 and 1991.

For FY-91, the $2 million DOE budget when combined with a $4 million SDI budget yields a program total of $6M. Because of the excellent results from the program to-date and emerging USAF interest in small compact survivable systems, we suggest a significant increase above the current DOE budget for thermionics:

Increase support for TFE Verification Program	$6 million increase (from $2 to $8 million)
Establish a thermionics base program for research	$2 million
Begin system design and analysis efforts	$6 million

With this increased DOE funding in 1991, the current program will successfully demonstrate the required mission lifetime by 1993.

Mr. BEVILL. We appreciate your fine statement.

You have given an excellent summary of those three programs and the most concise testimony we have had.

Thank you very much.

We appreciate the good work you are doing. We will work to try to do what we can.

TUESDAY, APRIL 3, 1990.

HIGH TEMPERATURE GAS REACTOR PROGRAM

WITNESS

DAN MEARS, GENERAL MANAGER, GAS-COOLED REACTOR ASSOCIATES

Mr. BEVILL. Next we have Dan Mears. You may proceed as you wish.

Mr. MEARS. Thank you, Mr. Chairman, Mr. Myers.

It is a pleasure to be here today to speak on behalf of Gas-Cooled Reactor Associates, the utility user organization that supported the development and commercialization of the gas-cooled reactor.

Through your support this technology has advanced and today has culminated into a modular HTGR concept that builds on the technology on the gas and water reactor experience to date and gains from the lessons learned, both good and bad, throughout the power industry.

This concept offers the promising and diverse approach for the revival of a nuclear option that is very appropriate for the broad segment of the U.S. power industry and an ideal product for export to the developing countries.

In addition, it is a delight to be here as this is the first year in our 12-year history to support the DOE's budget request of $25 million for this program in fiscal year 1991.

The new production reactor application of the MHTGR is now underway. This program offers a unique opportunity of spin-off benefits to the civilian program. We urge your attention and support to help effect the maximum dividends from this process. In particular, to formalize the spin-off benefits as one of the objectives of the new reactor program through maximize to the greatest extent possible the common design and information development aspects of the program.

The civilian program can make maximum progress by emphasizing the incremental design and technology development activities and to put increased attention on establishing the technical, economic and licensing basis for the lead project development and deployment.

I add this is needed and crucial for commercialization, whether or not the new production reactor proceeds to deployment.

Toward that end a lead project feasibility study has been underway during the past year as a result of an initiative from a prospective vendor team, General Atomics, Bechtel and Siemens, the latter bringing the experience and investment base from the German HTGR technology, working with a lead utility candidate, Consumer Powers, a member of the Gas-Cooled Reactor Associate program, with broad support throughout the utility industry.

The emphasis has been on the institutional development aspects of organizational development, cost for sharing models between the participants and with the government and a one step licensing strategy that evolved through the licensing reform process for the industry.

The goal of this study is to effect a worthy proposal to the government that will lead to a strong lead project oriented based programs. The overall goal, of course, is to lead toward deployment with a target of start up by the turn of the century.

To conclude, we would like to acknowledge the steadfast support of the subcommittee to this program and urge the continued support to see it through to fruition.

Thank you very much.

[The statement of Mr. Mears follows:]

STATEMENT SUBMITTED FOR THE RECORD
APPROPRIATIONS SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
UNITED STATES HOUSE OF REPRESENTATIVES

FY-1990 DOE APPROPRIATION FOR THE MODULAR HIGH TEMPERATURE GAS-COOLED REACTOR PROGRAM

L. DANIEL MEARS, GENERAL MANAGER
GAS-COOLED REACTOR ASSOCIATES

Mr. Chairman and Members of the Subcommittee, this statement is presented on behalf of the constituents of Gas-Cooled Reactor Associates (GCRA), the utility/user organization that supports the development and commercialization of the gas-cooled reactor. Through GCRA, the design requirements and development priorities of the prospective owner/operators are provided to guide the gas reactor program. Our goal is to culminate the development effort in a timely Lead Project that will secure the gas reactor as an attractive nuclear option which is responsive to the needs and interests of the owner/operators and the Nation as a whole.

With much credit to this Subcommittee, the U.S. gas reactor program has been sustained over the past decade and has now culminated with the development of the Modular High Temperature Gas-Cooled Reactor (MHTGR). Growing support for the MHTGR is based on the increasing recognition of its advantages and the recognized need for a new generation of advanced reactors to help meet future energy demand without the environmental problems associated with the over-reliance on fossil fuels.

The MHTGR advantages derive from the inherent material properties associated with ceramic coated fuel particles, graphite core structure and helium coolant. The adaptation of these inherent properties with design-specific features collectively assure a passive, self-limiting response for the full range of accidents considered for public health and safety protection. These characteristics result in enhanced safety margins without reliance on AC-powered safeguard systems and/or operator actions. These margins provide the technical basis for fulfilling the GCRA requirements of eliminating offsite public evacuation and sheltering plans. As a result, the MHTGR should provide eased siting and licensing plus improved overall public acceptance. Other attendant benefits of the passive safety features include simplified operation and maintenance activities, improved reliability and availability, enhanced protection of the plant investment plus added sabotage resistance. The once-through fuel cycle design with low enriched uranium also yields important advantages with regard to proliferation resistance.

The capability of adding variable power increments, in multiples of 135 MWe units, enhances the utility's overall system reliability plus provides flexibility in meeting different size utility systems and/or uncertain load growths. The modular nature of the design approach increases the extent of shop fabrication, which enhances standardization, quality assurance, learning, cost/schedule certainty and overall cost competitiveness.

The high quality steam and the physical separation of the nuclear island from a fossil plant-type energy conversion area also enhances cost competitiveness and facilitates a nuclear repowering option as well as a broad range of steam cycle cogeneration applications. Further, the MHTGR has unique technology growth potential for direct cycle-gas turbine electricity generation and high temperature process heat applications.

These overall features make the MHTGR well suited for the evolving business and regulatory environment within the U.S. and hence heighten the commercial prospects and payoff of the National investment. Further, the MHTGR is ideally suited for the export market, particularly the rapidly growing developing countries.

MHTGR Status - Civilian Program

The conceptual design of the MHTGR was completed in 1987. Heavy emphasis has been placed on pre-licensing activities during the past three years. A Preliminary Safety Information Document was prepared and submitted to the NRC in September 1986 and supported by other assessments. The objective of these pre-licensing activities has been to obtain a Safety Evaluation Report (SER) from the NRC that addresses the licensability of the MHTGR, the acceptance of the unique licensing criteria and their concurrence of the overall safety assessment. The NRC issued a draft SER in March 1989 which substantially validated the MHTGR's transparent and passive safety characteristics and its enhanced safety margins, particularly for postulated severe accidents. A final SER is pending NRC review of information from DOE on the basis for different approaches to containment on the civilian MHTGR design and the variant of the MHTGR being adapted for a New Production Reactor. The timely conclusion of the NRC's review of the conceptual design and issuance of a satisfactory SER is critical to the further development of the civilian MHTGR design and a Lead Project initiative.

The MHTGR Program is now underway with the preliminary design effort. The Department of Energy has contracted with Bechtel, Combustion Engineering, and General Atomics for the Nuclear Island design, and Stone & Webster for the Balance of Plant design that includes a subcontract to Combustion Engineering for plant control design support. Materials, fuels and fission product experimental programs that support the MHTGR design are ongoing at ORNL and at General Atomics. Other supporting technology programs involve experiments to test and/or confirm system and component designs, including a magnetic bearing technology development program funded by EPRI.

MHTGR Status - NPR Project Development

As noted earlier, DOE is adapting a variant of the civilian MHTGR design as a half-size New Production Reactor (NPR) Project at the Idaho National Engineering Laboratory as part of a dual technology, dual site program to assure an adequate supply of materials for the Nation's nuclear defense requirements. Aggressive efforts are underway for design and technology development plus related planning activities. A decision on construction commitment is scheduled for the end of 1991 and, if deployed, the projected schedule for startup of the initial module is 1998.

Broad utility support for the MHTGR-NPR Project is based on the expected benefits to the civilian MHTGR Program. Such benefits will accrue from the common design and technology development programs, construction and operation experience, and mutual infrastructure development. Crucial to realizing these benefits, of course, is the fulfillment of such commonality and the establishment of an aggressive civilian Lead Project that is effectively coordinated with the MHTGR-NPR Project.

MHTGR Status - Civilian Lead Project Development

Whether or not the NPR Project materializes, the civilian MHTGR Program must establish a Lead Project that will design, license, construct and operate a full scale, prototypical plant and thereby demonstrate that the MHTGR is safe, reliable and economic.

In support of civilian project development, a Lead Project Feasibility Study effort continues by the prospective MHTGR vendor team of Bechtel, General Atomics and Siemens with lead utility support from the Consumers Power Company along with additional support from the Philadelphia Electric Company and GCRA. The Study has developed a cost/risk sharing framework for Lead Project deployment that builds on the generating company experiences of Consumers Power. A one-step licensing strategy has been developed that builds on the recent developments in licensing reform and ALWR licensing interactions. The basic approach is that an independent power producing entity would purchase a fixed price, turnkey MHTGR Lead Plant if the price, combined with their estimates for owners costs, O&M costs, and other components of the resultant busbar costs would be competitive with an avoided coal plant. Fundamental to the strategy is a stable Government support for a sufficient share of the costs and risks.

A final draft report is under development for internal review by the Study principals. Further Lead Project development effort during 1990 will focus on the resolution of specific issues identified during the initial Study with the intent of establishing the basis for a proposal to DOE to jointly undertake such a Project.

What is Needed

Our goal for the MHTGR Program is to complete the deployment of a civilian Lead Plant around the turn of century plus achieve early design certification of a standard nuclear island thereafter. Even if the MHTGR-NPR is aggressively deployed and a large fraction of its development is applicable to the civilian MHTGR Program, continued Congressional support for an aggressive civilian MHTGR Program remains crucial to conduct the incremental developmental activities. Examples of major incremental developmental activities are the fuel and core development for the low enriched uranium fuel cycle and the overall licensing development effort with NRC.

For the civilian MHTGR Program in FY 1991, we are pleased to support DOE's budget request of $25 million. It is noteworthy that this is the first time in our twelve year history that additional Congressional budget support has not been required to sustain a viable HTGR Program. Regarding Program direction, we recommend that the civilian MHTGR Program establish a more formal coordination interaction with the MHTGR-NPR Program that will assure maximum commonality in design, technology and infrastructure development. Our utility requirements should be enveloped by the NPR requirements and the NPR objectives should include, to the greatest degree practical, the demonstration of prototypical components and systems for the civilian program. With such, the DOE resources in FY 1991 would be applied to development activities that are incremental to the MHTGR-NPR Program plus continue the interactions with the NRC. In addition, international cooperation should be expanded to reduce the U.S. costs of development and to maximize export market opportunities. The overall focus of the civilian MHTGR should be on establishing the bases for Lead Project deployment.

Mr. Chairman, you and this Subcommittee deserve much credit for your steadfast support of the MHTGR Program. We respectfully urge your continued support.

TUESDAY, APRIL 3, 1990.

NUCLEAR R&D PROGRAMS

WITNESS

ROBERT NEWMAN, VICE PRESIDENT, NUCLEAR POWER BUSINESS, ASEA BROWN BOVERI, INC.

Mr. BEVILL. Next we have Mr. Robert Newman.

Mr. NEWMAN. Thank you, Mr. Chairman.

I appreciate the opportunity to provide testimony to this subcommittee today on the Department of Energy and the Nuclear Regulatory Commission budgets for fiscal year 1991.

I am Bob Newman, Vice President of Nuclear Systems at ABB, Combustion Nuclear Power. Dr. Brewer hoped to be here today to present this testimony. He sends his apologies that he could not make it today. I am sure you are aware that Combustion is a wholly owned subsidiary of Asea Brown Boveri (ABB). All of ABB's other U.S. operations are now being integrated with Combustion Engineering. As a result, our company now employees over 40,000 people in the United States—with facilities in nearly every state of the nation. With annual sales approaching $7 billion, we are now the largest company in America to focus on the production transmission, and use of electrical power.

I expect that the 1990's will see our company assume a growing share of the world market for nuclear plants. However, the question of whether nuclear plants will even be a viable option in the U.S. during the 1990's will be strongly affected by the actions of this committee. I would like to focus my comments today on that particular issue.

DOE's fiscal year 1991 budget request includes absolutely no funding for the evolutionary PWR. In fact, DOE funding for this essential program during the current fiscal year, fiscal year 1990, is less than half the amount required to comply with the Nuclear Regulatory Commission's new Standardization Rule 10CFR52.

I would like to explain why it is imperative that this committee recommend that DOE provide sufficient funding ($7.0 million in fiscal year 1991) for this low-cost, high impact program, so that it may be completed in fiscal year 1992.

The nuclear recession, which set in during the mid-1970's ended the first nuclear era of the United States. It resulted from institutional factors—decreasing growth in electrical demand, high interest rates, unpredictable licensing by federal authorities, a lack of standardization, unfavorable rate regulations by state authorities, and a loss of support by the public. There were no inherent or pervasive deficiencies in the technology.

To restore nuclear power as a viable energy option in the U.S., our first actions must be to address these institutional obstacles. The institutional factors that this committee can directly influence are standardization and licensing. Last year, the Nuclear Regulatory Commission issued a new rule (10CFR52) that provides for prelicensing of standardized designs. Support for the development and NRC certification of standardized advanced reactors is the most important step that this committee can take to restore the nuclear option.

The evolutionary ALWR offers the only technology that has sufficient design information and operating experience to provide a meaningful Design Certification review by NRC. It is the only technology that has sufficient operating experience to provide utilities with the certainty and confidence needed for them to consider building nuclear plants again.

Absolutely no development to testing is required. The evolutionary ALWR program is, instead, an institutional demonstration of the new regulatory process—and, therefore, does not require great sums of government funding. Furthermore, this program is well supported by the industry participants with a 50 percent cost sharing arrangement. It has clearly defined end product (Design Certification) in 1992. It is needed to pave the way for the future licensing of other advances designs, including passive ALWR's. Its successful completion should receive the government's highest priority.

Some have argued that only one ALWR certification application is needed to demonstrate this institutional process. Our experience proves otherwise. It is essential for more than one applicant to be working with the NRC, if it is to establish a truly generic new licensing process.

To be successful, the program must proceed forward with two applications, one PWR and one BWR—to address the many safety and licensing issues not applicable (or resolved differently) for one or the other.

I believe that this committee should recommend full funding for NRC efforts to review the evolutionary ALWR applications. Furthermore, the committee should impress upon the Commission the importance of fulfilling the schedular commitments in the SRM.

The NRC's new Standardization Rule will dramatically change the way that nuclear plants are marketed and constructed in the future. Utilities have repeatedly stated that they will not even consider ordering new nuclear plants if the designs are not already pre-licensed by NRC.

It is not an either/or choice between the evolutionary and passive ALWR's. The consensus of the utilities (and the remainder of the nuclear industry) is that both approaches should be pursued.

[The information follows:]

STATEMENT SUBMITTED TO
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
OF THE HOUSE OF REPRESENTATIVES COMMITTEE
ON APPROPRIATIONS

FY 1991 BUDGETS FOR

DEPARTMENT OF ENERGY
NUCLEAR RESEARCH AND DEVELOPMENT PROGRAMS
AND
NUCLEAR REGULATORY COMMISSION

Dr. Shelby T. Brewer
President
ABB Combustion Engineering
Nuclear Power

April 3, 1990

Thank you, Mister Chairman, for the opportunity to provide testimony to this Committee as it considers the Department of Energy (DOE) and Nuclear Regulatory Commission (NRC) budgets for Fiscal Year 1991.

I am Shelby Brewer, President of ABB Combustion Engineering Nuclear Power.

I am sure that you are aware that Combustion Engineering is now a wholly owned subsidiary of Asea Brown Boveri (ABB). All of ABB's other U.S. operations are now being integrated with Combustion Engineering. As a result, our company now employs over 40,000 people in the United States -- at facilities in nearly every state of the nation. With annual sales approaching $7 billion, we are now the largest company in America to focus on the production, transmission, and use of electrical power.

Even before the merger, Combustion Engineering was a leading U.S. supplier of Pressurized Water Reactors. We were awarded contracts for Korean Units #11 and #12 in 1987 -- the first award, domestic or foreign, to a U.S. vendor in a decade. Nuclear plants using our reactor systems have consistently attained the highest capacity factors of any U.S. vendor since the mid-1970's. Our sister division in Sweden, ABB Atom, is a leading supplier of Boiling Water Reactors and other power plant equipment. Together, we have built some of the world's most reliable reactors. For the future, we are developing the most complete line of advanced reactors of any vendor in the world.

I expect that the 1990's will see our company assume a growing share of the world market for nuclear plants. However, the question of whether nuclear plants will even be a viable option in the U.S. during the 1990's will be strongly affected by the actions of this Committee. I would like to focus my comments today on that particular issue.

DOE has only one program, the Design Certification of evolutionary Advanced Light Water Reactors (ALWRs), that is currently in the process of resolving the largest single institutional obstacle to re-opening the nuclear option in the United States -- the licensing process. The evolutionary ALWRs are the only advanced reactor designs that have enough design detail, operating experience, and similarity to current designs to allow the NRC to establish its new licensing process and criteria for standardized designs. Only after this "institutional demonstration" can the NRC go on to review other advanced designs -- including the passive ALWRs -- which include new design features, that are unfamiliar to the NRC.

DOE's FY-91 budget request includes absolutely no funding for the evolutionary PWR. In fact, DOE funding for this essential program during the current fiscal year, FY-90, is less than half the amount required to comply with the Nuclear Regulatory Commission's new Standardization Rule 10CFR52. I would like to explain why it is imperative that this Committee recommend that DOE provide sufficient funding ($7.0 million in FY-91) for this low-cost, high impact program, so that it may be completed in FY-92.

DESIGN CERTIFICATION -- OVERCOMING THE FIRST INSTITUTIONAL OBSTACLE

The nuclear recession, which set in during the mid-1970's, ended the first nuclear era of the United States. It resulted from institutional factors -- decreasing growth in electrical demand, high interest rates, unpredictable licensing by federal authorities, a lack of standardization, unfavorable rate regulation by state authorities, and a loss of support by the public. There were no inherent or pervasive deficiencies in the technology. To restore nuclear power as a viable energy option in the U.S., our first actions must be to address these institutional obstacles.

The institutional factors that this Committee can directly influence are standardization and licensing. Last year, the Nuclear Regulatory Commission issued a new rule (10CFR52) that provides for pre-licensing, via Design Certification, of standardized designs. Support for the development and NRC certification of standardized advanced reactors is the most important step that this Committee can take to restore the nuclear option.

There is no question that the federal government should pursue R&D for all of the advanced technologies. However, in establishing priorities, government support must reflect the reality that each of the technologies will be available in different time frames. The only advanced reactor technology that is sure to be available for use by U.S. utilities in the 1990's is the evolutionary ALWR.

The evolutionary ALWR offers the only technology that has sufficient design information and operating experience to provide a meaningful Design Certification review by NRC. It is the only technology that has sufficient operating experience to provide utilities with the certainty and confidence needed for them to consider building nuclear plants again. Absolutely no development or testing is required. The evolutionary ALWR program is, instead, an institutional demonstration of the new regulatory process -- and, therefore, does not require great sums of government funding. Furthermore, this program is well supported by the industry participants with a 50% cost sharing arrangement. It has a clearly defined end product (Design Certification) in 1992. It is needed to pave the way for the future licensing of other advanced designs, including passive ALWRs. It's successful completion should receive the government's highest priority.

A lot has already been accomplished by the evolutionary ALWR program. Without our applications for certification submitted to the NRC, the Commissioners would likely have delayed passage of the Standardization Rule, 10CFR52. Our applications have provided the only impetus for the NRC to identify the major safety issues that must be resolved before future plants can be licensed. The detailed design information available in the evolutionary ALWRs is now allowing the NRC staff to translate its abstract concerns into detailed, specific resolutions.

Some have argued that only one ALWR certification application is needed to demonstrate this institutional process. Our experience proves otherwise. It is essential for more than one applicant to be working with the NRC, if it is to establish a truly generic new licensing process. To be successful, the program must proceed forward with two applications -- one PWR and one BWR -- to address the many safety and licensing issues not applicable (or resolved differently) for one or the other.

The Department of Energy's budget request for evolutionary ALWRs is only $500,000. This compares to $20 million (plus another $3 million more for severe accident licensing issues) that is proposed for the passive ALWR program. In fact, it is noteworthy that DOE's passive ALWR and Plant Life Extension programs each include both a PWR and BWR. This Committee should recommend that $7 million be provided for continuation of the highly cost-effective evolutionary PWR program. Even at this level, funding for passive designs would still be three times greater than for evolutionary designs.

KEEPING OUR OPTIONS OPEN

Some people argue that the passive ALWRs will be the next generation plants in the U.S., that they will be certified by 1995, and that there is no need for the evolutionary ALWR. Such views are not shared with a large majority of the nuclear community around the world. France, Japan, Korea, Taiwan and a majority of U.S. nuclear utilities believe that evolutionary plants will be the design of choice for many years to come.

Furthermore, it seems overly optimistic to assume that the passive ALWRs will begin NRC review by 1992 and complete rulemaking by 1995. The NRC plans to complete its review of the EPRI Requirements Document for passive ALWRs, before it begins review of the designs, themselves. Furthermore, they will include new design features never before reviewed or licensed by NRC, and the NRC will have to modify its regulations and guidance to conform to them. It, therefore, seems more reasonable to recognize that the passive ALWRs will not be certified until sometime in the late 1990's -- and possibly later, if the evolutionary ALWR program is not completed, to pave the way for them.

In addition, the nuclear industry is developing a consensus opinion that a lead unit will have to be constructed before U.S. utilities will be willing to order plants of these designs. Therefore, in the most likely scenario, the passive ALWRs will not be available for wide-scale deployment in the U.S. until after the turn of the century.

There is also a general misconception that the passive PWR design currently being supported with DOE funds will offer dramatic improvements in safety and simplicity over the evolutionary designs. In reality, we have just completed a very thorough and detailed risk analysis of our own evolutionary design, System 80+, and we found the probability of a severe accident to be less than the published figure for the passive PWR. This is because the evolutionary designs offer the operators more flexibility and fall-back actions if unforeseen events occur. Concerning the issue of simplicity, our evolutionary PWR will have no more components (e.g., valves) than the passive PWR, when measured on a "per Megawatt" basis. This is because utilities will have to build and maintain more than twice as many passive plants (at 600 MWe) to produce the same amount of electricity as a single evolutionary plant (at 1300 MWe).

BEGINNING A NEW PROGRAM

DOE proposes to begin a new LWR program in FY-91 to solicit bids for an Early Site Permit (ESP), at a funding level of $3.0 million in the first year and continuing for four or five years. However, if DOE does not complete the evolutionary PWR and BWR programs, then the ESP program would not be needed for several years, since, as I explained earlier, the only other potential users (the passive ALWRs) will probably not be certified before the late nineties. I, therefore, recommend that the Committee provide funding for the ESP program only if the evolutionary ALWR certification program is fully funded. Without the evolutionary ALWR certification program, the ESP program cannot serve a useful purpose at this time.

NRC REVIEW PRIORITIES

In 1989, the Commission approved the new Standardization Rule 10CFR52, which provides for pre-licensing of standard designs via Design Certification. At the time, the NRC was already reviewing two applications for certification of evolutionary ALWRs -- C-E's System 80+ PWR and General Electric's ABWR. The reviews were actually initiated in 1987. Later in the year, the Chairman of the Commission raised the issue of how NRC should prioritize its efforts in reviewing advanced reactor designs. During several hearings on the subject, the Commission heard from witnesses representing the utilities, NUMARC, EPRI, DOE, and the reactor suppliers. The consensus opinion expressed by the witnesses was that the ALWRs will be the next generation of nuclear plants in the U.S. and that there appears to be market interest in both evolutionary and passive designs. Following the hearings, the Commission issued a Staff Requirements Memorandum (SRM) instructing the NRC staff to complete its review of the C-E and GE applications and then focus on requirements for the passive ALWRs. Since issuance of the SRM, however, the Commission has vacillated on meeting the schedular commitments for review of the C-E and GE applications, because of concerns about resolving a number of generic safety issues for future plants.

I believe that this Committee should recommend full funding for NRC efforts to review the evolutionary ALWR applications. Furthermore, the Committee should impress upon the Commission the importance of fulfilling the schedular commitments in the SRM. We have always maintained the view that resolution of the generic issues can, and should, be developed in parallel with the NRC's review of the designs, themselves. Past experience has repeatedly shown that generic acceptance criteria cannot be finalized until the NRC sees how the criteria are implemented in real designs. Such feedback is essential to assuring that the criteria are achieving the intended result in a cost-effective manner.

The NRC's new Standardization Rule will dramatically change the way that nuclear plants are marketed and constructed in the future. Utilities have repeatedly stated that they will not even consider ordering new nuclear plants if the designs are not already pre-licensed by NRC. Therefore, the NRC cannot wait for someone to order a nuclear plant using a new design before giving priority to the design's certification review.

I also believe that this Committee should impress upon the Commission the importance of reviewing new standard designs as they are submitted and not attempt to limit the number of designs that will be certified. If the NRC attempts to limit or prioritize design reviews based on its own criteria, then the NRC will essentially be determining the marketability of one design over another -- since NRC certification will be one of the top requirements of utilities in purchasing future plants. To avoid giving unfair advantage, the NRC must accept new standard designs as they are received, and let a free and competitive market place determine which designs are preferred.

SUMMARY

It is not an "either/or" choice between the evolutionary and passive ALWR's. The consensus of the utilities (and the remainder of the nuclear industry) is that both approaches should be pursued. In both cases, there is a strong need to pursue both a PWR and a BWR.

Since the evolutionary ALWRs (1) only involve an institutional demonstration of the Design Certification process (at relatively low cost), (2) will be completed by 1992, and (3) pave the way for licensing the passive ALWR's, DOE must assure that this essential program is successfully completed. I, therefore, request that this Committee recommend that DOE provide $7 million in FY-91 to continue the PWR certification program.

Thank you, Mister Chairman, for the opportunity to appear before this Committee. I'm sure that you will do what is in the nation's best interest.

TUESDAY, APRIL 3, 1990.

CENTER FOR MOLECULAR ELECTRONICS

WITNESSES

HON. WILLIAM L. CLAY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MISSOURI

DR. TOM JONES, DEPUTY TO THE CHANCELLOR AND PROFESSOR OF PHYSICAL CHEMISTRY, UNIVERSITY OF MISSOURI AT ST. LOUIS

Mr. BEVILL. Congressman Bill Clay.

You may come forward. Proceed as you wish.

Mr. CLAY. Mr. Chairman, and Members of the subcommittee, I appreciate the opportunity to appear and seek your assistance in further development and enhancement of the Center for Molecular Electronics at the University of Missouri in St. Louis. Specifically, I am requesting that ten million dollars be directed to provide capital funds for the center. The Center for Molecular Electronics conducts multi-disciplinary research in two of the fastest developing and increasingly commercially significant fields of science, the fields of molecular electronics and synthetic metals.

The latter has most commonly come to the attention of laymen such as myself through press accounts concerning the development of high temperature superconductors.

The next major development in computer chip technology will be the replacement of the silicon chip, with one developed from a synthetic metal and which operates at the molecular level, enabling computers to operate up to 30 times faster than is presently possible.

A synthetic metal is a solid state material containing few or no metal atoms, but displaying the physical properties of a metal, such as electrical conductivity, light reflection, or magnetism. Beyond serving as the building blocks for Molecular based electronics, synthetic metals display a wide variety of commercial possibilities. For example, the Japanese have developed technologies where a molecular thin diamond coat may be placed on audio speaker diaphragms, enhancing frequency response, and on machine tools to enhance their resistance to wear.

A Japanese firm is also the first to market a rechargeable storage battery based on polyacetylene, an organic synthetic metal. Speaking of Japanese research and development efforts, Robert Dynes of AT&T and Mildred Dresselhaus of MIT were members of a team recruited by the Japanese Technology Evaluation Center, a program supported by the National Science Foundation, to tour Japanese superconductivity labs and to report back on their findings.

Now I quote from the team's report. The team's "most surprising discovery was the emphasis in Japan on organic superconductors. Japan has some 100 researchers studying these carbon-based materials, while a small group at Argonne National Laboratory provides the only major effort in the United States."

Two of the goals of the Center for Molecular Electronics are to enhance our understanding of and to develop new organic based synthetic metals, especially superconductors. Thus, the research interests and efforts of the Center for Molecular Electronics are very timely in their support of national efforts to remain internationally competitive in this area of research and development.

When fully funded and staffed, the center expects to have at least 24 individuals involved in research and development activities related to synthetic metals.

In addition to the above, this project is of special interest and importance to the St. Louis area for two additional reasons.

First, one of the component programs of the partnerships for progress initiative at the University of Missouri-St. Louis is the Bridge Program. The purpose of this program is to increase the number of talented high school students, who pursue higher education in the sciences and engineering.

Second, the ability of St. Louis to support the activities of the Center is matched by the importance of the work conducted by the Center for the Future of St. Louis. At the beginning of this century, St. Louis was the fourth largest city in the country. Regrettably, the industries that made St. Louis such a vital part of this country have also been among the industries most affected by the post-industrial revolution and the industrial reorganiztion and dislocation that has accompanied it. It is my strong conviction that the further development of the Center for Molecular Electronics will play a crucial role in the future of St. Louis, not only in terms of providing critical research, development, and educational resources to the area, but in terms of attracting and developing the kind of industries and products that will provide the basis for St. Louis' economic well-being into the next century.

Mr. Chairman, I have a more lengthy and more detailed statement that I would like to ask permission to insert in the record.

Mr. BEVILL. Without objection it will be inserted in the record.

Mr. CLAY. Thank you for this opportunity. I will be most appreciative of any assistance the committee can give us.

I have with me this morning, Mr. Chairman, Dr. Jones from the University of Missouri at St. Louis. He will be able to respond to any technical questions which you may have.

Mr. BEVILL. Any questions?

We will certainly work with you, Bill, and do the best we can.

[The statement of Hon. William L. Clay follows:]

TESTIMONY PRESENTED BEFORE
THE SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
COMMITTEE ON APPROPRIATIONS

CENTER FOR MOLECULAR ELECTRONICS
UNIVERSITY OF MISSOURI - ST. LOUIS

THE HONORABLE WILLIAM L. CLAY
APRIL 3, 1990

Honorable William L. Clay

Statement Before the Subcommittee on Energy and Water Development

April 3, 1990

Chairman Bevill, members of the subcommittee, I appreciate your consideration in permitting me time to make this presentation. I am here today to ask for your assistance in the further development and enhancement of the Center for Molecular Electronics at the University of Missouri-St. Louis. Specifically, I am requesting that ten million dollars be directed to provide capital funds for the Center. Five million dollars to be used to construct a building adjoining and connected to the Science Complex at the University of Missouri-St. Louis to house the Center. The other five million dollars will be used to equip the Center with state-of-the-art research equipment. I have attached to my prepared statement a list of the equipment that would be purchased with these funds.

The Center for Molecular Electronics conducts multidisciplinary research in two of the fastest developing and increasingly commercially significant fields of science, the fields of molecular electronics and synthetic metals. The latter is a field of science that has most commonly come to the attention of laymen such as myself through press accounts concerning the development of high temperature superconductors. The next major development in computer chip technology will be the replacement of the silicon chip, with one developed from a synthetic metal and which operates at the molecular level, enabling computers to operate 3 to 30 times faster than presently possible. A synthetic metal is a solid state material containing few or no metal atoms, but displaying the physical properties of a metal, such as electrical conductivity, light reflection, or magnetism. Beyond serving as the building blocks for molecular based electronics, synthetic metals display a wide variety of commercial possibilities. For example, the Japanese have developed technologies where a molecular thin diamond coat may be placed on audio speaker diaphragms, enhancing frequency response, and on machine tools to enhance their resistance to wear. A Japanese firm is also the first to market a rechargeable storage battery based on polyacetylene, an organic synthetic metal.

Speaking of Japanese research and development efforts, Robert Dynes of AT&T and Mildred Dresselhaus of MIT were members of a team recruited by the Japanese Technology Evaluation Center, a program supported by the National Science Foundation, to tour Japanese superconductivity labs and to report back on their findings (Science, vol. 242, pp. 594-5 (1989)). Now I quote from the team's report. The team's "most surprising discovery was the emphasis in Japan on organic superconductors. Japan has some 100 researchers studying these carbon-based materials, while a small group at Argonne National Laboratory provides the only major effort in the United States."

Two of the goals of the Center for Molecular Electronics are to enhance our understanding of and to develop new organic based synthetic metals, especially, superconductors. Thus, the research interests and efforts of the Center for Molecular Electronics are very timely in their support of national efforts to remain internationally competitive in this area of research and development. When fully funded and staffed, the Center expects to have at least twenty-four individuals (faculty, staff, graduate and undergraduate students) involved in research and development activities related to synthetic metals; a sizable effort in comparison with that of Japan and larger than that of the present effort underway at the Argonne National Laboratory.

In the last fifteen years, a large number of synthetic metals with physical properties of immense commercial potential have been discovered. Progress in the understanding and commercial use of these materials, while impressive, has been hampered by the multiple scientific and engineering disciplines which must be involved in the study of molecular electronics and synthetic metals. The need to combine such diverse disciplines as theoretical, synthetic, and physical chemistry, solid state and applied physics, material science, and electrical and electronic engineering have resulted in collaborative efforts involving laboratories all over the world. This has made the concerted investigation and development of a particular material and its commercialization difficult and slow. The Center for Molecular Electronics was established by the University of Missouri-St. Louis to deliberately bring together in one place the wide range of talent needed to study molecular electronics and synthetic metals. When fully operational, the Center will be able to conduct a full range of research and development activities at a much more accelerated pace than is currently possible. In addition, the Center will serve to focus and coordinate the wealth of expertise and interest in molecular electronics and synthetic metals presently existing in the St. Louis area with the intention of developing new high technology business activity.

The Center has concentrated its initial efforts in establishing partnerships with local and regional institutions such as Washington University, University of Missouri-Columbia, University of Missouri-Rolla, Emerson Electric, Eveready Battery, Brewer Science, McDonnell Douglas, Monsanto, and the St. Louis Technology Center. St. Louis, by virtue of its educational, industrial, public and geographic resources, is especially suited to provide the resources and assistance necessary to make this Center successful. As the Center grows, partnerships will be established with interested institutions without regard to geographic location. An especially attractive potential partner outside the immediate St. Louis area is Argonne National Laboratory which as noted earlier is interested in the study of organic based synthetic metals. I might add that the staff of the Center is presently involved in international joint research projects. While the purpose of the Center is to localize both expertise and facilities to diminish the need to rely upon disparate localities in order to conduct research, these kinds of cooperative efforts are to be commended and will be continued by the Center.

Another very important goal of the Center is that of technology transfer. By working in conjunction with the St. Louis Technology Center, the Center for Molecular Electronics is particularly well suited to speed the application of its research from the laboratory to the market. The St. Louis Technology Center provides administrative support and professional advice to "start-up" high technology businesses. The Center for Molecular Electronics will be able to provide research and development assistance and facilities to complement the administrative and professional assistance provided by the Technology Center. The St. Louis metropolitan region should be a particular fertile area for technology transfer because according to the 1980 census, approximately 38,000 scientists and engineers live and work in the greater St. Louis metropolitan area. Approximately, 70% of [illegible] engineers who live in the State of Missouri live and work [illegible] the St. Louis metropolitan region.

The University of Missouri-St. Louis, founded in 1963, is the youngest member of the University of Missouri System and offers course work and degree programs through the Ph. D. As the only publicly supported research University in the St. Louis area, the University of Missouri-St. Louis has a strong commitment to the support of the highly advanced technological industry which currently exists in the St. Louis area and to increase the level of current economic development. For example, the Board of Curators has recently approved an undergraduate engineering program to be offered by the University of Missouri-St. Louis which will complement its already existing strong programs in the sciences and mathematics.

Through the Partnerships for Progress Initiative, the University of Missouri-St. Louis is responding to three critical needs which are caused by the rapidly changing economy in Missouri as well as that of the United States. They are:

(1) The need to raise levels of math, science, and communications literacy in the general population and to equip large numbers of students with sophisticated skills and scientific and technological training in crucial areas;

(2) The need to assess the management, technological and scientific skills required by our changing economy and to enhance and to develop academic programs that will provide Missourians with these skills; and

(3) The need to establish new relationships between business and the University that will bring about new products and technology transfer.

In my view, this project is of special interest and importance to the St. Louis area. There is no question as to the scientific and commercial importance of the research being conducted by the Center and I think it safe to say that any area of the country, as well as the nation, would benefit by having such a facility in its vicinity. However, there are two additional reasons, why I feel encouragement and further development of the Center for Molecular Electronics at the University of Missouri-St. Louis to be particularly important and worthwhile.

First, one of the component programs of the Partnerships for Progress initiative is the Bridge Program which involves a number of faculty members at the University of Missouri-St. Louis working with secondary teachers and students in the St. Louis metropolitan area, particularly, in innercity schools. The purpose of this program is to increase the number of talented high school students, especially those from economically disadvantaged backgrounds, who pursue higher education in the sciences and engineering. The University of Missouri-St. Louis has already received substantial encouragement and financial support for these activities from several major St. Louis area private sector institutions. It is expected the Bridge Program will substantially increase the pool of underrepresented individuals available to participate in the research and development activities of the Center. It is an explicit goal of the Center to attract those who today are underrepresented in the fields of science and engineering and the Center is making an active effort to attract women, Blacks, and Hispanics to these pursuits through such programs as the Bridge Program.

Second, the ability of St. Louis to support the activities of the Center is matched by the importance of the work conducted by the Center for the future of St. Louis. At the beginning of this century, St. Louis was the fourth largest city in the country. Regrettably, the industries that made St. Louis such a vital part of this country have also been among the industries most affected by the post-industrial revolution and the industrial reorganization and dislocation that has accompanied it. Particularly in terms of its commercial industry, St. Louis has suffered seriously in the last three decades. Steel, shoes, bricks, meat processing, textiles, and the manufacturing of railroad and subway cars are among the industries St. Louis used to depend upon that are no longer in the area. As a result, today, the St. Louis economy has become dangerously dependent upon defense related industries. While molecular electronics and synthetic metals have obvious and significant implications for the defense industry, these fields will also have far-reaching impact upon commercial products. It is my strong conviction that the further development of the Center for Molecular Electronics in St. Louis will play a crucial role in the future of St. Louis, not only in terms of providing critical research, development and educational resources to the area, but in terms of attracting and developing the kinds of industries and products that will provide the basis for St. Louis economic well-being into the next century.

Chairman Bevill and Members of the Subcommittee, thank you again for allowing me this opportunity, and I will be most appreciative of any assistance this Committee can provide to this great need.

Again, thank you for the opportunity to appear before this Committee.

University of Missouri-St. Louis

Equipment Needs for

The Center for Molecular Electronics

Itemized Equipment List

1.	Vibrating Sample Magnetometer PARC 4500-13 including low temperature	$111,210
2.	Four Probe Electrical Conductivity Apparatus PARC Equipment plus above	$14,440
3.	Electron Spin Resonance Spectrometer	$150,000
4.	Electron Nuclear Double Resonance Spectrometer	$120,000
5.	Microwave Conductivity Apparatus	$150,000
6.	Microwave Plasma Deposition System	$100,000
7.	Molecular Modeling System	$102,000
8.	Dielectric Property Apparatus HP 8510 and Associate Equipment	$200,000
9.	Surface Characterization Laboratory	$350,000
10.	Thin Film Preparation Laboratory	$350,000
11.	Thin Film Characterization Laboratory	$350,000
12.	Computer (Stand alone mini for Calculations)	$1,000,000
13.	Advanced Polymer Synthesis/Characterization Lab	$650,000
14.	GC-MS	$150,000
15.	Dual Probe Nuclear Magnetic Resonance Spectrometer	$175,000
16.	High Field Nuclear Magnetic Resonance Spectrometer	$450,000
17.	FT Infrared Spectrometer	$120,000
18.	Magnetic Sector MS	$200,000
19.	Single Crystal X-ray Diffractometer	$200,000
20.	Computer/Lab Instrument Interface	$60,000
Grand Total		$5,002,650

TUESDAY, APRIL 3, 1990.

ROBOTICS FOR ADVANCED REACTORS PROJECT

WITNESSES

DAVID K. WEHE, ASSISTANT PROFESSOR, DEPARTMENT OF NUCLEAR ENGINEERING, UNIVERSITY OF MICHIGAN

PROFESSOR DELBERT TESAR, CAROL COCKRELL CURRAN CHAIR IN ENGINEERING, UNIVERSITY OF TEXAS AT AUSTIN

Mr. BEVILL. Next, Mr. David Wehe. Your prepared statement will be made a part of the record. You may proceed and summarize as you wish.

Mr. WEHE. I would like to introduce my colleague—first of all, thank you for the opportunity to be here. I would like to introduce Professor Delbert Tesar from the University of Texas. He is a member of our consortium and has agreed to be with me this morning.

You may remember that at the end of 1986 the Department of Energy through the Office of Nuclear Energy initiated a ten-year program to develop robotics, to perform surveillance inspection and maintenance in hazardous environments, and also the idea to develop the major technologies which would impact the design, operation and maintenance of advanced reactors.

This project, directed by two former assistant secretaries of Nuclear Energy, the leaders from academia and national labs and industry direct this program through the Board of Governors. The technology team consists of the Universities of Michigan, Texas, Tennessee, Florida, and Oak Ridge National Laboratory, with Oak Ridge National Laboratory providing the integrating function for this group.

The motivation for doing this work came from an OTA study which indicated overwhelming economic benefits by employing robotics in these nuclear environments. In particular, it said there would be reduced outage with the frequency and length of these outages, which are very expensive, improved efficiency in the work and a lot of health and safety benefits by removing people from these hazardous environments. In the case of an accident, well, the advantages were just overwhelmingly less.

Let me spend one moment and give you a description of the technology that we are trying to develop in this project. We are doing work in the area of locomotion, that is having to move an object from point A to point B; navigation, getting it there without hitting anything and getting it to the right place; the development of arms and manipulative hands so it can perform work when it gets there; being able to sense information about the environment and communicate it back to the operators and, of course, machine intelligence is important also.

Our progress during the last year has been rather impressive. During the last demonstration which we held at Oak Ridge National Laboratory, our second generation of motor robot entered the simulated reactor equipment room and navigated through narrow passageways and began inspection paths. During inspections it noticed a simulated sodium spill on the floor. It dexterously moved itself and its arms to clean up that mess, did a thorough job of it and completed its inspection task and left.

What was neat about this was there was no human intervention whatsoever. The robot did its work by itself autonomously in a hazardous environment.

There is more to it than that. That is the technology being developed. There is stuff coming out of our laboratory now which is exciting. One of the students said, "Show them. They will see." Let me show you the following picture.

What you see here is a piece of an M, a U made out of cobalt, a block of wood and some steel. The question is, is any of this radioactive? Is any of it dangerous? Well, it would be nice, and it has been the goal of mankind since the Manhattan project, to be able to determine whether that is true or not. In other words, to build a camera which can see radiation. The answer which we alluded to last year in our testimony is the radiation camera which we have developed, and there you see. That is the image of the radiation itself. Is it exciting, interesting?

We have not published this work, and all the national labs have asked us about it—Hanford, Savannah River, Department of Navy, Hughes and so forth. That is what is coming out of our laboratories today. You will see in the demonstrations in the years to come.

There are four features of this project. One is we think we are developing technology with wide applicability and great importance to American industry.

Second, this project demonstrates integration among fields, mechanical engineers, nuclear engineers are all talking to each other between the major universities of the country.

The third thing is portability. We are developing portable technology. What he develops at Texas runs at Michigan. What I develop at Michigan runs at Oak Ridge and so forth.

Finally, perhaps our most important product of all, people. We are developing PhD's. The PhD's are popping out in electrical, mechanical and nuclear materials science.

I request from the committee as follows: We develop the ties with the IFR and the PRISM program. They are in place. We are trying to develop the ties with the ER&WM effort. As that program becomes more developed, we think we can offer something to them.

We want to thank you for your support in the past. We ask for your continued support this year and into the future.

Thank you, Mr. Chairman.

Mr. Bevill. Are any efforts being made to patent this machine that will actually photograph radiation?

Mr. Wehe. Well, we are not too concerned about the patenting of it so much because we would like to turn it over to industry when it is far enough along. We are already onto our next design. We are past this one. We think this is neat, and we are happy to turn it over to industry and the national labs, and they can use the technology.

We are into something which hopefully we will tell you about next year which is even more exciting.

Mr. Bevill. Thank you very much.

[The statement of Mr. Wehe follows:]

Testimony
Presented to

The Energy and Water Development Subcommittee on Appropriations

by

Professor David K. Wehe, University of Michigan

on behalf of

The DOE/NUCLEAR ENERGY UNIVERSITY PROGRAM IN ROBOTICS FOR ADVANCED REACTORS

April 3, 1990

Program Purpose

The U. S. Department of Energy has provided support during FY 87-90 to four major universities and the Oak Ridge National Laboratory (ORNL) to pursue research leading to the:

> *"development and deployment of advanced robotic systems capable of performing critical tasks that are hazardous to humans, that generate significant occupational exposures, and/or whose execution times can be reduced if performed by automated systems."*

The goal is to develop a generation of advanced robotic devices capable of performing surveillance, maintenance, and repair tasks in nuclear facilities and in other hazardous environments.

Request for the Committee

The program has been funded at levels of $1.35M in FY87, $2.7M in FY88, $3.0M in FY89, $3.5M in FY90, and has not been included for funding for FY91. The four universities and ORNL are requesting support to *maintain the current funding level of $3.5M for FY91* to sustain the substantial progress towards the program goals.

Program Background

The Technical Team

The Universities of **Florida, Michigan, Tennessee, and Texas**, and ORNL are working as one team, with ORNL coordinating the teamwork.

The Strategy to Develop Advanced Robotics

The strategy adopted in order to achieve the program goals in an efficient and timely manner consists in utilizing, and advancing where required, state-of-the-art robotics technology through close interaction between the universities and the manufacturers and operators of nuclear power plants (Combustion Engineering, General Electric, Florida Power and Light, Gulf States Utilities, and Consumers Power). The approach to achieving the program objective is a transition from teleoperation to the capability of autonomous operation within three successive generations of robotic systems.

Progress of work by the team members towards the common goal is demonstrated during the project through coordinated experiments. For these experiments, equipment and software developed at the different institutions is combined annually at ORNL in order to test the interaction between components and to perform tasks of increasing complexity as the project progresses. These tasks are defined to be relevant to specific nuclear environment servicing needs. The project is further guided by a Board of Governors consisting of leaders from industry, academia, and the national laboratories, and is currently led by a recent Assistant Secretary of Nuclear Energy.

The Motivation for Developing Advanced Robotics

The motives for undertaking a comprehensive research effort in the application of advanced robotics to maintenance, inspection, repair and testing tasks in hazardous environments reflect both monetary considerations and health and safety concerns. The development of a general-purpose robot to perform skilled labor tasks in restricted environments can have extensive payback in areas of energy systems (nuclear and fossil units) and other hazardous activities.

The health and safety aspect of being able to project man's capabilities without his presence are considerable. In summary, electric utility companies currently show a need for modular, general-purpose robotic devices that can:

(1) Reduce the routine occupational exposure of personnel during normal plant activities like inspection, surveillance, maintenance, and radioactive waste handling.
(2) Provide for in-service inspection, surveillance, and on-line maintenance which will reduce plant downtime and save costly replacement power.
(3) Have the capability to deal effectively with radioactive leaks or spills, thereby reducing personnel accident exposure levels.

(4) Reduce the amount of radioactive waste material and expendables associated with maintenance activities.
(5) Decommission and replace major components.

The additional safety aspect resulting from the ability to undertake activities that might otherwise not be possible is less obvious but just as real. An automated repair system will not only preserve the health and safety of the personnel directly involved but also may correct a situation which, if allowed to continue, could have farther-reaching health and safety consequences.

In the area of economic advantages, quantifiable economic benefits from the implementation of advance robotics technology for nuclear power plants are related primarily to raising plant availability by executing testing and some maintenance tasks while the reactor is operating. With purchase replacement power for a 1000 MWe plant costing an average of $500,000 a day, it is estimated that lost electrical production alone accounts for approximately $1-2 billion of replacement costs in the U. S. nuclear industry.

For a range of individually identified maintenance and health physics tasks, an EPRI study estimated costs ranging from $100,000 to $1,000,000 each, but noted the limited availability of robotic equipment suitable for the nuclear industry. Studies by the Public Service Electric and Gas Company have predicted annualized robot savings for several of these tasks ranging from $47,000 to $100,000. These estimates now appear to *underestimate* the savings based upon the recent very positive results of applying robotics at four nuclear plants.

The potential savings resulting from the availability of an intelligent maintenance robot being developed under this project are immense when applied to the potential economic consequences of an accident event such as TMI-II or Chernobyl. The costs for clean-up and replacement power at TMI-II amounted to $1 billion and $4 billion respectively. Entombing of the damaged Chernobyl reactor and site clean-up are estimated at $2 billion. There are no estimates for off-site costs. The savings from utilizing intelligent robots in these situations are estimated at 25% to 40%, or $250 million to $800 million for the clean-up alone.

Additional savings can also be expected from the higher quality of work achieved by the automated process and the elimination of the low productivity of maintenance personnel who must toil under arduous operating conditions with protective clothing and life support systems which restrict capability and create tired workers precluding continuous output of high-quality work.

Fiscal Year 1990 Progress

During the past year, the team has invented and developed an impressive array of robotics technology. During DEMO89, our new second-generation mobile robot autonomously entered a replicated reactor equipment room, maneuvered through narrow hallways and around unanticipated obstacles using ultrasonic sensors and optical television cameras, and surveyed the area for problems. During the inspection, the robot located a simulated sodium spill on the floor, and dextrously used tools to clean up the spill. After thoroughly cleaning the spaces, the robot then left the room via another path to perform other tasks. While this was done without any human intervention, the human could have taken control using a force-reflecting joystick. This particular application was of direct interest to the IFR and PRISM programs.

While DEMO89 revealed next-generation technologies, even more advanced capabilities are currently emerging from our laboratories. These include new types of locomotion (snake robots), navigation techniques, sensing modalities (radiation cameras and lasers), environmentally hardened components (for temperature and radiation), and dextrous manipulators. These new robots have an unparalleled man-machine interface and inherent intelligence, with the capability of being able to integrate many diverse sensors simultaneously. For DEMO90, we will demonstrate radiation sensing to isolate actual radiation hazards.

The importance of robotics in the nuclear industry is becoming clear. We have continued to maintain close ties with the IFR and PRISM reactor concepts since it is during their current design phase that robotics will be introduced. In addition, the new Secretary of Energy has noted the critical importance of robotics in the upcoming environmental cleanup efforts. We are participating in the current planning phases of the ER&WM program, and expect to be able to contribute to this effort when it becomes more defined.

Finally, we note that, in addition to developing technology, this project offers three unique benefits. First, this project develops portable technology -- work which is developed at one site which can be directly exported and used at another facility. Second, it demonstrates the success achievable by an integrated team of universities, each of which contributes multiple engineering disciplines. Finally, it develops people -- the new mechanical, electrical, material, and nuclear engineers who are needed for our secure technological future.

The Program's Future Needs

The program plan calls for a ten year effort, with increased industrial activity and decreased university R&D beginning during years 6 and 7. Adjusted for inflation, we are requesting a slight decrement in funding for FY91, and project continuously declining needs for the remaining four years of this program.

TUESDAY, APRIL 3, 1990.

DOE R&D PROGRAMS

WITNESS

JAMES R. WELTY, CHAIRMAN, TASK FORCE ON THE DOE BUDGET, AMERICAN SOCIETY OF MECHANICAL ENGINEERS

Mr. BEVILL. Next we have Dr. Welty. We are pleased to have you with us. You may proceed as you wish.

Mr. WELTY. Thank you, Mr. Chairman, Members of the committee. My name is James Welty. I am a professor of mechanical engineering at Oregon State University. By the way, we play pretty good basketball there, too, Mr. Myers.

I am here representing a task force of the American Society of Mechanical Engineers with the specific purpose to address the fiscal year 1991 proposed budget of the Department of Energy, focusing on the issue of funded engineering research, with particular focus on those aspects of the budget related to university-based engineering research.

I have submitted a written statement which I request be put in the formal record, sir.

Mr. BEVILL. Without objection, your statement will be made a part of the record.

Mr. WELTY. Thank you. I will try to be brief and focus on a couple of the things which I believe to be most important.

I would first like to stress that engineering research is a vital part of the research and development process. There is a gap between the discovery of new scientific principles and knowledge and the implementation of this knowledge and to production processes. This transitional effort is what engineers do. The success of such efforts is based upon engineering research.

As an example, I would cite the subject of high critical temperature superconducting materials. The engineering research program in the Department of Energy Division of Basic Energy Science has had, among others, a workshop on the subject of novel uses of these kinds of materials.

The workshop was successful in that it did its job. It stimulated the community, research proposals were prepared, submitted, passed peer review in many cases with flying colors. Yet, the funding level of this particular program is at such a low level that it precluded the possibility of funding all of this excellent work.

In fact, it precluded the funding of any significant portion of it. Thus, the workshop and the potential of the workshop fell far short. As a matter of fact, the 1991 fiscal year budget for this program actually shows a decrease. This is even before inflation, a decrease in funding to a level which is going to be slightly less than 3 percent of the total BES total.

It is in the area of translation from discovery to implementation where it seems that the United States is falling behind its contemporaries in the world. We, believe, at ASME, believe that the government must make a commitment to engineering research and stay with it. It is programs like engineering research that also support the great majority of university researchers which in addition to the projects they work on are involved in educating the graduate students who will be the technical leaders of the next generation.

The research issues are important. They can be picked up next year with time lost, but the potential loss in graduate education, the people and resource loss and the form of people has implications which are even more serious. We are vitally concerned with this.

We would submit that Federal support is vital for university research support and the attendant educational issues. Some industries support very few research programs, and they are often primarily of the short term, quick-fix type. The funding level support of university-level research we believe is vitally important. We are seriously concerned about the implications in the trend of the BES budget for engineering research. We hope that you will consider this plea.

It has been a pleasure. I thank you for the opportunity to talk to you this morning.

Mr. BEVILL. Thank you very much.

[The statement of Dr. Welty follows:]

The American Society of
Mechanical Engineers

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Statement of the
Council on Engineering Task Force
# of the
American Society of Mechanical Engineers

on the
U.S. Department of Energy
FY 1991 Budget Request

Before the
Subcommittee on Energy and Water Development
Committee on Appropriations
U.S. House of Representatives

April 3, 1990

Mr. Chairman and Members of the Subcommittee:

I am James R. Welty, Professor of Mechanical Engineering at Oregon State University. I am here today to testify on behalf of a Task Force of the Council on Engineering of the American Society of Mechanical Engineers (ASME). My testimony represents the considered judgement of this task force, a group of engineers with expertise in energy-related matters, rather than an official position of ASME. Our society will be 110 years old this year; we have 119,000 members, 19,100 of whom are currently-enrolled students.

The subject of energy, in its broadest sense, is central to the mechanical engineering field. ASME, as the principal technical society within this field, is vitally concerned with the programs and budget of the U.S. Department of Energy (DOE). While our interest in the overall DOE R&D budget is pervasive, in this presentation I shall direct my remarks to two issues that we believe must be addressed in FY 1991. I shall begin with some brief remarks on Secretary Watkins' efforts to develop a National Energy strategy. The bulk of my presentation, however, deals with the issue of energy-related engineering research and education.

National Energy Strategy

For the past year, the Department has engaged in a broad effort to develop a National Energy Strategy. The ASME has been privileged to be a contributor to this effort. The interim report on DOE's findings is expected to be publicly debated for the next four to six months, and the final National Energy Strategy submitted to the President in December. Because this plan could well dictate the policy for federal investment in energy R&D for years to come, it is essential that its content accurately portray the weaknesses as well as the strengths of our energy R&D investments to date, and appropriately set near-term and long-term priorities for future R&D expenditures.

To some extent, the Department's FY 1991 budget request previews the administration's interpretation of these priorities; increased support for solar and renewable energy programs, decline in funding for fossil energy R&D and status quo (if not reduced) support for nuclear energy R&D.

Although the Task Force applauds the increased attention to energy efficiency technologies, and the proposed increases for the solar and renewable programs, we are concerned that the total budget for all renewable energy technologies is only 1.7 percent of the total DOE budget which is inadequate to develop these resources to their full potential. We are also concerned that the budget suggests a highly conservative, if not overly cautious, perception of the role of nuclear power in the nation's energy supply mix. In our view, the present and future potential contributions of nuclear power to a balanced national energy policy requires its inclusion in the Department's baseline scenario for a national energy strategy, not simply as an alternate energy resource. Future funding for nuclear energy R&D should reflect this importance.

Engineering Research and Education

There is an extremely important area that the ASME Task Force believes has been grossly understated in the DOE FY 1991 budget request and which must be included as an essential element of our long range energy policy. For this reason, the balance of my presentation to you will focus on those aspects of the budget request that relate to federal support for energy related engineering research at our public and private universities.

I wish initially, to emphasize that engineering research is a vital part of our country's overall research effort. It is unfortunate that many individuals think that scientists, alone, do research and that engineers only apply it. Let me state unequivocally, that engineers do perform research - both basic and applied in nature - and that engineering research continues to be inadequately funded within the federal budget. This is true virtually across the board, but I will confine my remarks today to the U.S. Department of Energy and, in particular, to three specific programs which are of great importance to the university research community. These three are the Engineering Research Program, an activity under the Office of Basic Energy Sciences; the University Research Instrumentation (URI) program, and the University and Science Education (USE) program.

1. Basic Energy Sciences

The Office of Basic Energy Sciences (BES), under the Office of Energy Research, is the principal DOE supporter of fundamental, long-range energy research. It thus represents a major source of research funding at universities. In the introduction to the FY 1991 BES budget request, it is stated that "More than one-third of BES funding supports university-based research." In the case of Engineering Research, FY 1990 funding was distributed as follows: universities, 60%; national laboratories, 29%; private firms and others, 11%. Clearly this program has a significant component devoted to university research.

The FY 1991 budget request for BES is $649 million, of which $504 million is for direct support of research - an increase of 10 percent above the FY 1990 level. In contrast, the requested amount for Engineering Research is $15.002 million, less than 3 percent of the BES budget, compared to the FY 1990 level of $15.354 million, which was 3.4 percent of the BES total. The funding level for Engineering Research has actually decreased - even before accounting for inflation. We are alarmed at these figures, and especially at the trend. We feel that the Engineering Research program in BES should be funded at a minimum of twice the budget request, i.e., at a level of $30 million per year.

The BES Engineering Research program has been very astute in its attention to contemporary research issues. During FY 1989 this program sponsored two workshops on the subjects of "Novel Applications of High Temperature Superconductors," and "Bioprocessing Research for Energy Applications." In these meetings, groups of world-class researchers met to assess the current issues in their field and to define appropriate research topics for the short and long term. As a result of workshops like these, the research community was stimulated to develop research proposals which address the topical areas identified. Unfortunately, however, at the current level of funding, this program is unable to accommodate the many technically sound research ideas that have been proposed.

In our opinion this is a truly unfortunate situation. These topical areas are obviously important when one considers the current technological problems associated with competitiveness - where high temperature superconducting materials offer promise; the enormous problems faced by this nation in the area of environmental restoration and waste management - where bioprocessing of waste is a promising technology; and in public safety - where the safe lifetimes of older structures such as freeways and aircraft bodies might be better defined and predicted with increased research attention.

Some of the research areas that are currently being addressed (intelligent machines, multiphase flow, plasma processing of materials, automated welding, and fracture characterization and prediction in structural materials) are clearly relevant and in tune with current concerns of our country. To move ahead in these areas in a timely fashion, the Engineering Research program must have a higher funding base, and must be solidly linked, through collaborative ventures, to the new product design and development efforts of the private sector. Again, there is precious little effort to support such colloborative endeavors.

We now turn our attention to the engineering education components of the Department's budget request. In particular, these budgets contribute to the education of graduate students who will become the technical leaders of the next generation. Limited funding of university projects has obvious connotations as to the long-term effect on graduate-level education.

2. University Research Instrumentation

The FY 1991 budget request for the University Research Instrumentation program is $5 million, the same as has been budgeted for the past four years. We believe that this is one of the soundest investments that the federal government can make and we enthusiastically support the continued funding of the URI program.

One of the major handicaps faced by university researchers is the inability to acquire large capital equipment items. This program supports such acquisitions - allowing expensive, state-of-the-art instruments to be available for university principal investigators and their graduate students. Individual awards from this program average over $200,000, which is typically greater than the capital equipment budget for an entire school of engineering.

3. University and Science Education

The DOE University and Science Education program is directed specifically to strengthening the capabilities of universities and colleges to contribute effectively to the Department's long-range R&D mission. The stated objectives of this program involve increasing universities' R&D capabilities, utilizing DOE laboratory facilities to assist in enhancing our national competitive structure, increasing the numbers of trained young people in energy-related professional careers, and involving university faculty and students with DOE laboratory personnel and facilities in joint research and educational ventures.

The requested FY 1991 budget for this program is $29.76 million, an increase of 19 percent over the FY 1990 level. A significant portion of this increase is in the generic area of precollege support for minority and inner city/rural students. We certainly applaud these efforts wholeheartedly.

We note that the FY 1991 budget for this program, as proposed, discontinues the nuclear engineering research and education program which has been funded at levels ranging from $5 million to $6 million for each of the past three years. We also note that the increased support for university research and training reactors initiated last year at $1 million has also been excluded in the request. Because these investments are helping to sustain the vitality of graduate research in nuclear engineering and energy-related nuclear science, we strongly recommend that funding for these programs be retained. This DOE support has helped to maintain the vitality of graduate research in the nuclear engineering field and has likely enabled certain of these programs to survive.

Summary

The ASME Council on Engineering Task Force endorses the Department of Energy's efforts to develop a National Energy Strategy, suggesting however, that this strategy must accurately reflect the importance of all our indigenous energy supply options, including fossil, solar, renewable and nuclear power, to our nation's long term goal of achieving a high level of energy self sufficiency. This goal can only be achieved through increased funding for vigorous development of our renewable and nuclear energy resources over the next decade.

Of particular concern to the Task Force is the fiscally understated support for engineering research and engineering education in the proposed FY 1991 budget request. Engineering research is critically important to adequately addressing the major energy supply, environmental and economic competitiveness problems facing our nation in the next decade and beyond. We must make the necessary investments in long-range engineering research and education now in order to effectively impact and sustain our world leadership in the rapidly changing international community. We suggest a doubling to $30 million of the Department's support for engineering research in the Basic Energy Science budget, sustained support for the university instrumentation program, reinstatement of funding for nuclear engineering education and for increased operating and maintenance support for university research and training reactors.

On behalf of our task force, Mr. Chairman, I thank you for the opportunity to present our views before this Committee.

TUESDAY, APRIL 3, 1990.

ENERGY RESEARCH

WITNESS

PAUL TARMAN, VICE PRESIDENT, INSTITUTE OF GAS TECHNOLOGY

Mr. BEVILL. Next, Mr. Paul Tarman. You may proceed as you wish, Mr. Tarman.

Mr. TARMAN. Good morning, Mr. Chairman. My name is Paul Tarman. I am vice president of research and development at the Institute of Gas Technology.

Mr. Chairman, January 1990 was an historic month. For the first time in history, we imported over half our oil product demand, and our dependency on foreign oil continues to grow. This trend cannot be reversed unless we develop new, environmentally acceptable, technologies that compete economically with imported oil.

The natural gas industry has addressed these issues by recommending a wide range of gas-related research programs. IGT strongly supports this position, and recommends two technologies for your consideration.

First is the production of our huge geopressured-geothermal methane resource in the Gulf Coast area. This resource contains over 5,700 quads of geopressured natural gas. If only 10 percent were produced, it would add more than 30 years to our domestic supply of natural gas. A like amount of energy is contained in the geothermal heat of the hot brine.

Commercialization of this enormous, domestic energy resource requires long-term production, to offset the high initial costs of drilling deep wells into the geopressured zone. A better understanding of this resource is needed to predict the long-term capacities of both the reservoirs and the brine disposal aquifers. This information will also be useful to a recently formed industrial coalition investigating a wide variety of uses of the geothermal heat.

Three wells are under study by DOE.

The Gladys McCall well, in Louisiana, has produced over 27 million barrels of hot brine and 675 million cubic feet of natural gas during the DOE test program. This well is now ready for final testing. Sidetracks must be drilled to obtain core samples that can be compared to those taken when the well was first drilled. Understanding changes in the formation due to gas and brine production is essential in predicting the economic potential of this resource.

The Pleasant Bayou well, in Texas, is now producing one megawatt of electricity, two-thirds from the natural gas, and one-third from the hot brine. Results to date are very encouraging. Next year, the well should be operated at high flow rates, for a prolonged period, to determine the size and quality of the reservoir.

The Hulin well, in Louisiana, is the deepest and hottest of the three wells. This well may contain free gas, over and above that dissolved in the brine. Surface facilities are needed at Hulin so that scientific experimental data can be obtained, especially at high flow rates. These facilities should be designed and long lead procurement initiated to allow testing of the reservoir in fiscal year 1992.

IGT recommends that $9.6 million be appropriated for this program.

Gasification of our municipal wastes is another means of preserving our domestic gas supply, while simultaneously solving our critical shortage of environmentally acceptable landfill sites. Because of this shortage, many municipal waste incinerators are being installed to produce electricity from our MSW. However, incineration produces emissions, including dioxins in some cases, and incineration is not the most efficient means to produce electricity from this resource.

IGT has developed a process, called RENUGAS, that is non-polluting and more efficient than incineration. RENUGAS is a pressurized, fluidized-bed process for the gasification, rather than the incineration, of biomass and wastes. It is a flexible process that can produce methanol, fuel gas, or electricity in a highly efficient, environmentally acceptable manner. Incineration cannot produce either methanol or fuel gas.

Finally, because of its low operating temperature, RENUGAS does not emit dioxins, and the closed gasification process releases no other harmful emissions. RENUGAS is also more efficient than incineration, producing 40 percent more electricity and releasing 25 percent less carbon dioxide, per unit of electricity produced.

To advance this technology, IGT recommends that $1.0 million be appropriated to begin a two-year program to apply RENUGAS to the production of clean fuels by gasifying MSW in an existing process research unit at IGT.

Thank you, Mr. Chairman, that concludes my testimony. I appreciate the opportunity to appear before this subcommittee, and I would be happy to answer any questions you may have.

[The statement of Mr. Tarman follows:]

STATEMENT BY PAUL TARMAN
VICE PRESIDENT, RESEARCH AND DEVELOPMENT
INSTITUTE OF GAS TECHNOLOGY
SUBCOMMITTEE ON ENERGY AND WATER
HOUSE COMMITTEE ON APPROPRIATIONS
April 3, 1990

This testimony proposes recommendations for FY91 Energy and Water Appropriations for the following programs:

* $9.6 million to continue the scientific data acquisition and analysis at the three geopressured/geothermal wells, Hulin (LA), Pleasant Bayou (TX) and Gladys McCall (LA), including design-related activities at Hulin, high flow rate testing at Pleasant Bayou, and core acquisition and testing at Gladys McCall, and

* $1.0 million to begin a two-year program to apply the RENUGAS technology and IGT's existing process research unit to the production of methanol through the gasification of RDF.

Mr. Chairman, January 1990 was an historic month. For the first time in our history, we imported over 50% of our oil and oil product needs. Such reliance on imported energy was not attained even during the worst periods of the 1970's energy crises. In 1989, oil imports increased more than 8% above 1988, accounting for 45% of our 1989 trade deficit.

These increases are not due to increasing demand; worse yet, they are at the expense of our domestic production. Domestic oil output decreased by more than a half-million barrels per day in 1989, and is expected to fall an additional 350,000 barrels per day this year. This trend will continue unless we develop new technologies that compete economically with imported oil. We need short-term solutions to meet current demand, but we also need long-term solutions to reverse this trend. The lead times for bringing our most promising technologies to market are long, requiring careful and adequately funded research and development. Furthermore, these technologies must be energy efficient while simultaneously maintaining a sound commitment to environmental protection and stewardship.

Attention to energy and environmental policies is a growing public concern. The President has joined the Congress in pushing clean air legislation, while the Secretary of Energy has taken on the enormous task of formulating a comprehensive National Energy Strategy for the future. Today's voters look more closely at the environmental records of candidates. Utility users are more willing to pay increased rates as long as those increases produce more environmentally responsible technologies. This trend will surely accelerate.

With the tremendous global political changes that have occurred in recent months, perhaps the most positive "peace dividend" is the opportunity to focus both our dollars and our technical skills on these energy and environmental challenges. With the world looking to us as a model of democracy, we must also be prepared to offer clean, safe, efficient technologies that solve the world's energy needs as well as protect its air and water.

The natural gas industry has offered the Congress a set of recommendations that address both the energy and environmental issues. These gas-related Department of Energy research programs total $135.7 million for FY91, $17.6 million of which falls within the jurisdiction of this subcommittee. IGT strongly supports this position, which promises more efficient use of our natural gas resources. All our energy resources must be developed. No one resource alone, even our coal, which has an energy value more than one and a half times all the known oil and gas resources in the world, can solve these problems. What happens if the clean air debate this year negates the use of much of our coal resource?

The Congress and the scientific community must work together in selecting the proper technical menu so that scarce federal funds can be wisely spent on energy and environmental solutions that are both politically desirable and technologically achievable. As our reliance on imported energy continues to worsen, federal programs must increase the pace of our search for new sources of domestic energy at a delivery cost that caps world energy prices.

The most difficult task in establishing priorities falls to the Congress. The technologies we recommend today are for advanced development, and by definition bear significant levels of risk and uncertainty of success. The whole role of federal funding is not in avoiding risks, but in assuming risks worth taking on behalf of our national interest.

It is in that spirit, Mr. Chairman, that IGT emphasizes the following specific recommendations for FY91 funding:

GEOPRESSURED/GEOTHERMAL METHANE:

The current DOE Geopressured/Geothermal program is directed toward solving the technical issues inhibiting the economic development of the huge U.S. geopressured/geothermal resource in the Gulf Coast area. These reservoirs consist of thousands of trillion cubic feet (TCF) of natural gas and a like amount of energy in hot brine. In this program, brine and natural gas from these deep reservoirs are brought to the surface, the energy is extracted and the brine is re-injected into another saline aquifer. The commercial viability of this enormous domestic energy resource depends on the reliability of long-term production from these wells to offset the high initial costs of these deep wells. Hardware must be developed that will resist the highly corrosive brines and greater understanding and predictability must be obtained of the long term flow rates and capacities of both the producing reservoirs and disposal aquifers.

This program requires the involvement of various organizations with expertise ranging from well operations, surface facilities and hybrid electric power plants to geology, physical chemistry, reservoir modelling, environmental studies and experimental data analysis. In addition, private industry is forming a coalition to coordinate potential uses of this resource. This group includes both major and independent oil companies, utilities and companies involved in food growing and processing, horticulture and aquaculture.

The Hulin, the deepest and hottest of the three wells currently being tested under the DOE program, is also the only test well that has the potential for free gas in addition to the gas dissolved in the brine. Due to budget constraints, the Hulin well was only operated for a short period of time in FY90, but that testing has shown that the reservoir merits the expense of long term, high flow rate well testing. In FY91, more comprehensive testing is required to obtain information for the design of the well and surface gas and brine handling facilities. These facilities should be designed and long lead procurement should be initiated to allow construction and testing of the reservoir in FY92.

At Pleasant Bayou, a one megawatt power plant has been installed, the first demonstration of electricity production from both the natural gas and the thermal energy in the hot brine. Two thirds of the electricity is generated from a portion of the natural gas released from the brine, and one third from the thermal energy in the brine, using a turbine with an isobutane working fluid. Operation and testing has begun, and will be completed during FY90. The well should then be tested at high flow rates for a prolonged period to yield information about the size and quality of the reservoir and the reservoir rocks.

The Gladys McCall well has produced over 27 million barrels of hot brine and 675 million cubic feet of natural gas during the DOE test program, and is now ready for the final phase of testing. This involves drilling sidetracks from the well into the reservoir, taking core samples, and comparing them with samples taken when the well was drilled to determine changes in rock properties. Understanding the changes that have occurred in the reservoir as a result of the testing is essential in predicting the economic potential of the entire resource.

To support this program, IGT recommends:

*** $9.6 million to continue the scientific data acquisition and analysis at the three geopressured/geothermal wells, Hulin, Pleasant Bayou and Gladys McCall, including design-**

related activities at Hulin, high flow rate testing at Pleasant Bayou, and core acquisition and testing at Gladys McCall.

PRESSURIZED GASIFICATION OF REFUSE DERIVED FUELS:

Even with the growing emphasis on recycling municipal solid wastes, communities throughout the country are rapidly running out of acceptable landfill space. Significant efforts have been made by many communities, even after recycling as much as possible, to further reduce the volume of their disposable wastes by burning the remaining refuse, either by simple incineration or by burning it in a waste-to-energy plant.

Many municipal waste combustion systems have improved their efficiency and material-handling reliability by first converting the bulk municipal waste to refuse derived fuel (RDF), sorting out the non-combustibles and processing the remainder into a consistent shredded or pelletized fuel.

IGT has developed a process called RENUGAS that will be an improvement beyond current municipal waste disposal technology. RENUGAS is a pressurized, fluidized-bed process for the gasification of biomass that can be applied to RDF. Gasifying RDF as part of a methanol synthesis and a combined cycle power plant will allow municipal wastes to be reduced in volume and converted to methanol and electricity in a highly efficient, environmentally sound manner.

In contrast to some municipal waste combustion systems, the closed gasification process offers total control over harmful emissions. RENUGAS will also produce more electricity, with efficiencies up to 45%, rather than the 32% characteristic of mass-burn steam cycles. This improved efficiency will not only make the plants more economical, but will also release 25% less CO2 for the same amount of electricity produced.

Finally, the flexibility of RENUGAS in methanol synthesis and combined cycle power plants makes it economic in a wide range of sizes and capacities, allowing its advantages to be gained by a broader range of communities and users beyond the primarily urban or regional facilities common for combustion systems.

To advance this technology, IGT recommends:

* **$1.0 million to begin a two-year program to apply the RENUGAS technology and IGT's existing process research unit to the production of methanol through the gasification of RDF.**

Mr. Chairman, that completes my testimony. I appreciate the opportunity to appear before this Subcommittee, and I would be happy to answer any questions you may have.

GEOPRESSURED/GEOTHERMAL METHANE

The DOE Geopressured/Geothermal program is directed toward solving the technical issues inhibiting the economic development of the huge U.S. geopressured/geothermal resource in the Gulf Coast area. These reservoirs consist of thousands of trillion cubic feet (TCF) of natural gas and a like amount of energy in hot brine.

In this program, brine and natural gas from these deep reservoirs are brought to the surface, the energy is extracted and the brine is re-injected into another saline aquifer.

The program's objectives include:
o improving the understanding of reservoir behavior,
o developing test procedures to determine reservoir capacity,
o developing hardware to resist the highly corrosive brine,
o demonstrating the reservoirs' ability to accept long term disposal of the spent brine,
o ensuring environmentally acceptable operation of both withdrawal and injection well systems,
o determining how to best utilize energy from this resource, and
o determining methods and hardware that will minimize fluid production costs.

This program requires the involvement of various organizations with expertise ranging from well operations, surface facilities and hybrid electric power plants to geology, physical chemistry, reservoir modelling, environmental studies and experimental data analysis.

Participating organizations include: Eaton Operating Company as the principal field contractor, Institute of Gas Technology, the Ben Holt Company, University of Texas at Austin, University of Southwest Louisiana, S-Cubed, Louisiana State University, Rice University, the Bureau of Economic Geology of the University of Texas at Austin and EG&G Idaho.

In addition, private industry is forming a coalition to coordinate potential uses of this resource. This group includes both major and independent oil companies, utilities and companies involved in food growing and processing, horticulture and aquaculture.

Three wells are included in this program: Gladys McCall (LA), Pleasant Bayou (TX) and Hulin (LA).

The Gladys McCall well has been extensively tested and has produced over 27 million barrels of hot brine and 675 million cubic feet of natural gas during the DOE test program. The flow-test program is now complete and the well is ready for the final phase of testing. This involves drilling sidetracks from the well into the reservoir, taking core samples, and comparing them with samples taken when the well was drilled to determine changes in rock properties. An understanding of the changes that have occurred in the reservoir as a result of the testing will provide a better understanding of this reservoir and will be useful in predicting the economic potential of the entire resource.

A one megawatt power plant has been installed at Pleasant Bayou and operation and testing has begun. This is the first demonstration of electricity production from both the natural gas and the thermal energy in the hot brine. Two thirds of the electricity is generated from a portion of the natural gas released from the brine, and one third from the thermal energy in the brine, using a turbine with an isobutane working fluid. This demonstration will be completed in FY 90. The well should then be tested at high flow rates for a prolonged period to yield information about the size and quality of the reservoir and the reservoir rocks.

The Hulin well is the deepest and hottest of the three wells, with a depth of 20,700 feet and bottom hole temperature of 340° F. This is the only test well that has the potential for free gas in addition to the gas dissolved in the brine. Due to budget constraints, this well was only operated for a short period of time in FY 90, using rented surface equipment to determine the suitability of the reservoir for long term testing. This short period of testing has shown that the reservoir merits the expense of long term, high flow rate well testing . In FY 91, more comprehensive testing is required to obtain information for the design of the well and surface gas and brine handling facilities. These facilities will be designed and long lead procurement will be initiated to allow construction and testing of the reservoir beginning in FY 92.

PRESSURIZED GASIFICATION OF REFUSE DERIVED FUELS

Even with the growing emphasis on recycling municipal solid wastes, communities throughout the country are rapidly running out of acceptable landfill space. Significant efforts have been made by many communities, even after recycling as much as possible, to further reduce the volume of their disposable wastes by burning the remaining refuse, either by simple incineration or by burning it in a waste-to-energy plant.

Many municipal waste combustion systems have improved their efficiency and material-handling reliability by first converting the bulk municipal waste to refuse derived fuel (RDF), sorting out the non-combustibles and processing the remainder into a consistent shredded or pelletized fuel.

Problems still remain, however. There is growing concern about the pollutants that may be emitted from municipal solid waste incinerators and waste-to-energy plants, and about the toxics created in those combustion processes.

The Institute of Gas Technology (IGT) has developed a process called RENUGAS that will be an improvement beyond current municipal waste disposal technology. RENUGAS is a pressurized, fluidized-bed process for the gasification of biomass that can be applied to RDF. Gasifying RDF as part of a methanol and higher alcohol synthesis and a combined cycle power plant will allow municipal wastes to be reduced in volume and converted to clean, oxygenated fuels and electricity in a highly efficient, environmentally sound manner.

Because of its low temperatures, the RENUGAS process does not produce the dioxins created in same municipal waste combustion systems, and the closed gasification process releases no harmful emissions. RENUGAS will also produce more electricity, with efficiencies up to 45% rather than the 32% characteristic of mass-burn steam cycles. This improved efficiency will not only make the plants more economical, but will also release 25% less CO2 for the same amount of electricity produced.

Finally, the flexibility of RENUGAS in alcohol fuel synthesis and combined cycle power plants makes it economic in a wide range of sizes and capacities, allowing its advantages to be gained by a broader range of communities and users beyond the primarily urban or regional facilities common for combustion systems.

IGT recommends $1.0 million to begin a two-year program to apply the RENUGAS technology and IGT's existing process research unit to the production of oxygenated fuels through the gasification of RDF.

Mr. Bevill. Mr. Richard Irby was scheduled to appear at this point, but he is not here. We will put his statement in the record.

[The information follows:]

NEW PAGE

AGA American Gas Association

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Richard M. Irby III
Vice President
Government Relations

April 3, 1990

Honorable Tom Bevill
Chairman
Subcommittee on Energy
and Water Development
Committee on Appropriations
U.S. House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

I am enclosing herewith a statement of the American Gas Association with our views on the necessary funding levels for FY91 for natural gas-related research and development (R&D) conducted or sponsored by the Department of Energy.

Now that the hearings have been completed before your subcommittee on FY91 funding for the Department of Energy, we ask that our statement be made a part of the subcommittee hearing record.

Thank you for your consideration.

Respectfully,

Richard M Irby III

Richard M. Irby III

Enclosures

STATEMENT OF
THE AMERICAN GAS ASSOCIATION
BEFORE THE SUBCOMMITTEE ON
ENERGY AND WATER DEVELOPMENT
COMMITTEE ON APPROPRIATIONS
UNITED STATES HOUSE OF REPRESENTATIVES
ON THE FY 1991 DEPARTMENT OF ENERGY
RESEARCH AND DEVELOPMENT BUDGET

April 3, 1990

- -

The American Gas Association (A.G.A.) is a national trade association comprised of some 250 natural gas distribution and transmission companies serving over 174 million natural gas consumers throughout the United States. We appreciate this opportunity to present our views on natural gas-related research and development (R&D) conducted or sponsored by the Department of Energy (DOE).

The natural gas industry recommends an appropriation of $17.6 million for FY 1991 for renewable energy R&D falling under jurisdiction of this Subcommittee. This includes $9.6 million for geopressured methane R&D and $8 million for biofuels R&D.

The Importance of Gas-Related Research

The United States needs an adequately funded DOE research program, not only to meet future energy needs and reduce national security risks, but also to remain competitive in today's world economy. Gas-related research should be the most important component of DOE's research program.

Natural gas energy has an important role because its attributes favor its use in a myriad of applications. Natural gas is the cleanest of all fossil fuels. Gas can be used for pollution control by itself and to reduce sulfur and nitrogen oxide emissions of other fossil fuels. Gas can also be used as a vehicular fuel. No other single fossil fuel can be used in as many applications, with the inherent environmental benefits as natural gas.

The natural gas industry's million-mile transmission and distribution pipeline network provides an existing infrastructure to deliver energy and environmental improvements to every region of the country. Further, natural gas can be converted into usable energy more efficiently and inexpensively than other fossil fuels.

Research and development programs can continue to improve end-use appliance efficiency, as well as provide energy supply benefits. DOE's role in natural gas research serves two very important purposes in pursuit of these goals. First, DOE's support of gas supply-related research will ensure the recovery of a larger percentage of the total gas resource base, which, when hydrates are included, is much larger than the current estimates of the economically recoverable gas resource base. The amount of gas that can be recovered from the total gas resource base is directly contingent upon our ability to develop new tools and techniques to recover this gas at commercially viable prices.

In May 1988, the Department of Energy released a study entitled, An Assessment of the Natural Gas Resource Base of the United States. This study concluded that, in the lower 48-states, there are 1,059 trillion cubic feet (Tcf)of gas that can be tapped with existing technology. At the 1988 level of nationwide gas consumption, this amount is approximately equivalent to a 58-year supply. While the number is encouraging, low gas prices have forced new drilling ventures to address only the less risky and shallower deposits where payback on investments is more likely. What remain to be developed are concepts for recovering conventional and unconventional gas at competitive prices. Federal sponsored research is necessary to exert downward pressure on gas exploration and production costs, providing increased confidence that gas will continue to be available at competitive prices.

DOE funding is also needed to make significant improvements in the area of energy efficiency through the development of gas technology. Research of this sort will allow for the more efficient use of our domestic resource, and thereby reduce our nation's reliance on foreign oil. It will also facilitate economic growth by enabling U.S. industry to compete in the global marketplace more effectively, using our own resources and reducing pollution.

The gas industry has always recommended funding that is consistent with sound fiscal policy. However, our recommendation for all gas-related DOE funding for FY 1991 will show increases in fuel cells, natural gas vehicles, heat combustion systems and other industrial technology commercialization funding. Such an increase is sound public policy and in keeping with the need for least-cost clean air compliance measures.

Specific Funding Recommendations

RENEWABLE ENERGY: $17.6 Million

(1) Geopressured Methane ($9.6 Million)

Geopressured methane is found in either a free state or dissolved in water and trapped in sedimentary rock at higher-than-normal pressures. One of the largest geopressured areas underlies a portion of the Texas and Louisiana Gulf Coast. Estimates of the total resource in-place range up to 6,000 Tcf; however, estimates of the amounts of gas that might ultimately be recovered, given current recovery techniques, range between 10 and 150 Tcf. If technological breakthroughs can be achieved, geopressured methane could become another major source of domestic energy.

Research conducted by DOE in geopressured/geothermal zones is focused on producing both gas and electricity from low-grade heat in the reservoir brine. DOE should redirect its research efforts and concentrate on recovering the vast amount of dissolved methane found in geopressured zones. In addition to DOE's current geopressured program, DOE should develop new approaches that utilize traditional engineering principles to maximize gas production and minimize brine production.

(2) Biofuels ($8.0 Million)

Since the supply of organic and waste materials is virtually unlimited, supplemental methane supplies from biomass and waste conversion can add significantly to the total future gas supply picture. In addition, controlled production and use of methane from these sources can reduce natural release of methane from the decay of these waste materials. This decay is a substantial contributor to the overall rate of methane emissions to the atmosphere that contribute to the greenhouse effect. Finding sites for disposal of municipal solid waste is an increasing problem in communities across the nation. Therefore, developing energy from municipal solid waste and other biomass would promote the environmental benefit of productive use of currently "useless" materials. However, the quality of the gas produced and a suitable processing technique are important concerns that inhibit the widespread use of these potential gas resources.

The gas industry fully supports the gas-related biofuels R&D being carried out at the Solar Energy Research Institute (SERI) and recommends strong federal support for continuation of these important activities. Advances have been made in both the thermochemical and biochemical conversion processes, but more extensive studies and technology advancements are necessary to fulfill biomass' contribution as a usable source of energy.

Of particular interest to the gas industry is SERI's work in the biotechnology process of anaerobic digestion of municipal solid waste that includes genetic and other improvement of biological organisms and development of innovative reactor design concepts.

Another significant area of research at SERI includes methods to remove carbon dioxide from the air or from combustion plant stacks.

$4.0 million is needed to perform these two gas-related initiatives in FY 1991. We also urge Congress to provide a strong, stable funding level for all biofuels research work at SERI. This research program has experienced drastic funding cuts in recent years.

Conclusion

The natural gas industry recognizes that the continuing budget deficit places severe constraints on federal energy research dollars. Our total recommendation this year for the two programs under this Subcommittee's jurisdiction of $17.6 million are very modest in cost. As the Administration, Congress and the public focus on clean air problems, there is a growing consensus that natural gas has a major role to play in solving this problem. To achieve this objective there must be increased federal funding for research and development to increase natural gas supplies and utilize this gas more efficiently. If Congress adopts our research recommendations, the nation will, over the long term, improve its energy supply security, energy efficiency, and environment.

DOE FY 1991 Gas-Related Budget
Major Gas-Related Research Programs
($ Millions)
(As of 3/07/90)

	FY 1990 DOE Request	FY 1990 Gas Industry Recomm	FY 1990 Congress Approp.	FY 1991 DOE Request	FY 1991 Gas Industry Recomm
ARTD (Gas Related)	3.0	6.0	4.7	3.9	6.0
Fuel Cells (Gas Related)	6.5	36.5	30.1	7.1	40.5
Surface Coal Gasif.	8.7	3.4	23.7	8.5	8.5
Underground Coal Gasif.	0.4	2.5	0.8	0.5	0.5
Heat Engines	0.0	8.0	0.0	0.0	2.9
Combus.--Cofiring/Reburn	N/A	N/A	2.5	0.0	8.5
Combus. Sys/Emiss. Cont.	0.0	2.0	0.0	0.0	0.5
Geosciences	3.0	*	4.0	4.5	*
Unconventional Nat'l Gas	4.1	15.0	14.6	13.7	23.3
Conservation	10.2	29.5	25.4	17.8	16.8
NGV/Diesel Vehicles	0.7	9.5	2.5	4.0	10.6
Biofuels	4.5	5.0	8.6	2.5	8.0
Geopressured Resources	2.9	8.4	6.0	2.9	9.6
TOTAL	$44.0	$125.8	$122.9	$65.4	$135.7

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*While the gas industry is supporting geosciences as a concept, it is not supporting a specific line-item funding level. The industry is supporting a funding level of $10 million for gas-related geoscience work.

TUESDAY, APRIL 3, 1990.

RENEWABLE ENERGY RESEARCH AND DEVELOPMENT

WITNESSES

EARL KELLY, DIRECTOR OF GOVERNMENT AFFAIRS, AMERICAN WIND ENERGY ASSOCIATION

GERALD W. BRAUN, DIRECTOR, ADVANCED ENERGY SYSTEMS RESEARCH, PACIFIC GAS & ELECTRIC

CLINT COLEMAN, VICE PRESIDENT AND CHIEF ENGINEER, NORTHERN POWER SYSTEMS

Mr. BEVILL. Next, we have Mr. Kelly.

Mr. KELLY. Good morning, Mr. Chairman. I am with the American Wind Energy Association. I would like to thank you and the subcommittee members and your staff for inviting us to testify today.

With me on my left is Mr. Clint Coleman of Northern Power Systems. Mr. Coleman is vice president and chief engineer for Northern Power Systems, which is a contractor on the advanced wind turbine. We will speak more about the advanced wind turbine later. We would welcome any questions the subcommittee members have on the turbine to be directed at Mr. Coleman.

On my right is Mr. Gerald Braun of Pacific Gas & Electric. It is the largest user of wind power or wind-produced electricity. I think he would enjoy answering questions you have concerning the feasibility of large-scale uses of wind power in the country and the future for wind energy.

I would like to briefly report on the status of wind energy today since this subcommittee has worked for so many years helping us with the research and development of wind energy technology. In 1981 commercial wind projects produced enough electricity to power two homes. In 1989, only eight year later, commercial wind power in the United States produced over 2 billion kilowatt-hours of electricity, or enough to meet the residential needs of approximately 900,000 people. We are very proud of this progress.

Another significant trend that we have seen, is that in the early 1980s it cost approximately 25 cents per kilowatt-hour to generate electricity with wind power. In 1989 the average cost was 7 to 9 cents per kilowatt-hour with some newest equipment at some of our best wind sites producing for slightly under 5 cents per kilowatt-hour. We think that is rather dramatic progress.

The turbines' reliability has improved from about 60 percent in the early 1980s to over 95 percent last year. The efficiency has improved from about 60 percent just five years ago—I am sorry, from about 13 percent just a few years ago to about 25 to 30 percent now. The machines are much more reliable, more efficient, more cost-effective.

Still, more needs to be done for several reasons. There are the obvious environmental concerns that Congress is addressing now. We must find cleaner sources of power.

There is for us also an export trade problem. The rest of the world is spending more on research and development of wind energy technology, and wind power turbines last year were Denmark's fifth largest export. That is a rather substantial export. The

United States imported more capacity in wind turbines last year than we manufactured domestically. The single manufacturer providing most of those from abroad was Mitsubishi of Japan.

The obvious situation that we have is we must reduce our costs still further. And to do that, Congress last year created the advanced wind turbine initiative. Both appropriations committees provided an additional million dollars over the administration's request last year and earmarked that for the advanced wind turbine initiative. Three authorizing committees in Congress last year called for the advanced wind turbine in the committee reports. The Renewable Energy and Energy Efficiency Act of last year specifies the advanced wind turbine is one of the goals for DOE.

Our problem is rather simple this year, simple to explain, not so simple to solve, I am afraid. Last year Congress appropriated about $9.35 million for wind energy R&D. This year the administration has requested $8.6 million, which is about enough to keep the ongoing background projects within DOE funded, but it does not provide monies for the advanced wind turbine initiative.

We think the advanced wind turbine initiative is one of the most important projects for the future of wind industry. Therefore, we are asking the subcommittee to support an appropriation of $11 million for wind energy with $2 million of that being earmarked for the advanced wind turbine initiative, much like $1 million was last year, and the remaining $9 million going to continue the Department of Energy's background wind energy R&D projects.

That in a nutshell is our request.

Mr. BEVILL. Very good. We will certainly look at this and see what we can do.

[The statement of Mr. Kelly follows:]

AP9T5162.A-4 ⑲

American Wind Energy Association

Testimony Of

Earl Kelly, Director of Government Affairs
American Wind Energy Association

Accompanied By

Gerald W. Braun, Director
Advanced Energy Systems Research, Pacific Gas & Electric

and

Clint Coleman, Vice President and Chief Engineer
Northern Power Systems

Before The

Subcommittee on Energy and Water Development
Of The
House Committee on Appropriations

Concerning

FY 1991 U.S. Department of Energy Appropriations
For
Wind Energy Research and Development

April 3, 1990

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Pacific Gas & Electric

Environmental Policy Advisor
Christopher Flavin
Worldwatch Institute

Summary of AWEA's Request

As will be shown later in this testimony, the American Wind Energy Association (AWEA) requests that this Subcommittee support an FY 1991 appropriation for Wind Energy Research of $11.0 million, with $9 million of that amount supporting fundamental Department of Energy research in wind energy, and with $2 million being earmarked for continuation of DOE's Advanced Wind Turbine (AWT) project. Congress, in response to the nation's need for clean, renewable sources of energy authorized the AWT in 1989 and appropriated monies for the first step of the project. The Administration's budget request for wind energy R&D for FY 1991 is less than Congress appropriated in FY 1990, and does not request sufficient funding to permit continuing work on the AWT. Additionally, AWEA requests $2.5 million, as a minimum, for CORECT, the interagency body that promotes export of renewable energy technology.

Introduction

Mr. Chairman and distinguished Members of the Subcommittee, I am Earl Kelly, Director of Government Affairs for the American Wind Energy Association (AWEA). It is an honor to appear before you today on behalf of the members of AWEA, and I would like to thank the Subcommittee and its very capable staff for inviting us to make our request concern-

1730 N. Lynn Street, Suite 610, Arlington, VA 22209 USA Tel. (703) 276-8334 Telex 6503304640 MCI UW

ing the Department of Energy FY 1992 Appropriation for Wind Energy Research and Development.

With me today is Mr. Clint Coleman, Vice President and Chief Engineer for Northern Power Systems, which is located in Moretown, Vermont. Northern Power Systems is one of three contractors selected by the Department of Energy to design the Advanced Wind Turbine, a new generation of wind turbine that Congress authorized last year and for which initial funding was appropriated. Mr. Coleman is working on the Advanced Wind Turbine and welcomes your questions concerning progress on the turbine's design and on the future of this important project.

Also accompanying me today is Mr. Gerald W. Braun, Director of Advanced Energy Systems Research for Pacific Gas & Electric. PG&E is the utility that markets the most electricity generated by wind power in the world. It should be pointed out, also, that Pacific Gas & Electric actively conducts research and development in wind energy technology and works closely with members of the wind energy industry in improving wind-powered electricity generation. In February of this year, PG&E said of wind energy, in light of today's low fuel costs, "[W]ind energy will become the most economic new base load source by the year 2002." PG&E went on to indicate that if fuel prices rise substantially, wind energy could be the most economic new source of electricity within the next two to three years.

Mr. Braun is available for any questions you have on wind energy's productivity and costs, as well as on what advancements need to be made in wind energy technology.

Status of Wind Energy in the United States

In past years, this Subcommittee worked to fund federal research in wind energy; to help the Subcommittee in reaching its decision on the FY 1991 Appropriation for this program, I would like to report briefly on the progress of wind energy in the United States. As you will see, the monies appropriated by this Subcommittee for wind energy R&D have helped to make possible a new, clean source of electricity.

Wind energy technology has made remarkable progress over the last decade. In 1981, the industry was virtually non-existent as a source of utility power, producing only 10,000 kilowatt-hours (kWh), or about enough electricity to serve two homes. In 1989 in California, wind generated 2.125 billion kWh, enough to serve the residential needs of a city of over 900,000 people--more than the population of either San Francisco or Washington, D.C. Between 1988 and 1989, there was a 17% growth in wind-generated electricity in the United States.

There are now more than 14,000 commercial-size wind turbines in California and Hawaii, and these turbines have a total installed capacity of approximately 1,400 Megawatts (MW).

The costs of wind-generated electricity have declined from 25 cents per kilowatt-hour (kWh) in 1981 to as low as 5 cents per kWh at the most outstanding sites in 1989. More typically, wind sites produce electricity for 7 to 9 cents per kWh.

Several factors now make it less costly to produce electricity by wind power, and these improvements are the result of DOE R&D projects and of private industry's efforts. First, wind turbine efficiency, as measured by what is known as "capacity factors," has increased steadily, rising from an average of 13% in 1985, to an annual average of approximately 25% for new turbines in 1989, with turbines at the best sites averaging over 40%.

In the first few years of commercial development, technical failure of wind-powered turbines was common; in 1981, for example, the first utility-connected wind turbines functioned only about 60% of the time. However, turbines that have been introduced in the past few years have an availability (reliability) factor of over 95% whenever suitable wind speeds exist.

Notwithstanding the progress that has been made in wind energy technology, more needs to be done. If we as a nation hope to improve our environment, clean renewable sources of power must play a larger role. But, competition with other power sources is made more difficult by the fact that environmental and health costs that result from burning fossil fuel are not considered in the pricing of electricity. Therefore, AWEA's goal is to achieve a consistent 5 cent per kWh generation cost for wind energy between 1995 and 2000, so that wind-powered turbines can compete effectively in the market place.

Estimates by Lockheed and General Electric have shown that in the United States, wind-powered turbines potentially could supply about 40% of current national electricity consumption. Realistically, considering the differing regional needs for additional generating capacity, as well as certain limitations on access to transmission lines, wind energy could provide 5%-10% of our nation's electric power within the next few decades.

Foreign R&D in Wind Energy Technology and Growing World Market

Because of they are efficient, reliable, affordable, and non-polluting, there exists a large international market for wind-powered turbines. Today, wind-powered turbines are Denmark's fifth largest export, with those turbines being sold in developing and industrialized nations alike. In 1990, according to the British Wind Energy Association, the government of Denmark will provide export guarantees to international buyers of approximately $93 million.

In short, because of government support, Danish and other foreign wind turbine manufacturers are getting ahead of their American competitors; in 1989, the majority of wind-powered generating capacity installed in the United States was manufactured abroad, and the single largest provider of that capacity was Mitsubishi of Japan.

It should prove helpful to the Members of this Subcommittee to compare American and foreign R&D expenditures for wind energy technology. I have provided the Members with a table outlining foreign government and private funding for wind energy R&D. Summarized very briefly, it shows that five governments are known to spend more than the U.S. on wind energy R&D, with some of those governments spending two to three times the amount invested by the U.S. government in wind energy research and development. Meanwhile, private funding for wind R&D in the United States compares favorably with private funding in those countries whose governments spend more on this important research and development.

FY 1991 R&D Appropriations Request

In the 1970's, after the OPEC oil embargo, the DOE initiated an ambitious research and development program in wind energy that put the United States in the international vanguard of wind technology. In the 1980's, however, these budget levels were reduced by approximately 90%, and we have seen foreign countries and companies enter the marketplace and seize the initiative.

The DOE appropriation for wind energy performs a vital function: the department and the national laboratories conduct technical and economic studies that are on the forefront of aerodynamics, structural dynamics, advanced components and other supporting research. From these studies the commercial industry obtains a better understanding of the designs needed to build more cost-effective and reliable turbines.

In 1989, this Subcommittee began to reverse a decade of decline in support for wind R&D, and recommended an appropriation of $9.35 million for wind energy research and development, which was $1 million more than the Administration had requested. In its Report for the FY 1990 Energy and Water Development Appropriations (House Report 101-96) the House Committee on Appropriations stated:

> The Committee recommendation of $9,350,000 includes $1,000,000 to initiate a program to design and build an advanced wind turbine (size 200-1,000 kW) in cooperation with the private sector. The goal of the advanced wind turbine initiative shall be to offer improved performance at lower capital and operating costs.

Nearly identical language appears in the Senate Appropriations Committee's Report accompanying the FY 1990 Appropriation (Senate Report 101-83).

Additionally, last year Congress passed the "Renewable Energy and Energy Efficiency Technology Competitiveness Act of 1989" (Public Law 101-218), which the President signed into law December 12, 1989. This law provides a three-year authorization for the DOE wind energy R&D program, and specifically instructs DOE to conduct research and development in the Advanced Wind Turbine project; the law describes the AWT with considerable specificity.

In reporting the "Renewable Energy and Energy Efficiency Technology Competitiveness Act of 1989," three Committees in Congress instructed the Department of Energy to begin work on the AWT and described the Advanced Wind Turbine in great detail. Those descriptions and discussion can be found in House Report 101-308, Part I (House Committee on Science, Space, and Technology); House Report 101-308, Part II (House Committee on Energy and Commerce); and Senate Report 101-107 (Senate Committee on Energy and Natural Resources).

Conceptual design for the Advanced Wind Turbine already has begun, and the AWT will be a major source of electricity. By increasing machine efficiency the

AWT will reduce the cost of electricity generated by wind energy from 6-9 cents/kWh to 5 cents/kWh or less at sites with lower wind speeds. It will reduce capital costs of new wind energy from $1,000 to $700 or less per kW of installed capacity. Capacity factors for the new wind turbines will be increased to 30%-35%.

Very importantly, the Advanced Turbine will be an intermediate-size (300 - 500 kW) commercial turbine capable of operating economically in wind speeds of 12-16 mph (compared to 16-18 mph for existing machines). Therefore, this important project will permit use of wind turbines in a wider range of locations.

The Advanced Wind Turbine will accomplish these goals by containing a variable speed generator which allows turbine speed to change as wind speeds change, thereby harnessing more power from the wind. And, it will include power electronics and digital control hardware that tailor electric power quality to better match utilities' operations. It will have improved blades that boost power output and withstand a wider range of environmental conditions.

The U.S. Department of Energy projects completion of a prototype of the AWT by FY 1995, with commercial production by 1998. Increased funding levels could accelerate this timetable.

AWEA, after consulting knowledgeable individuals, estimates that the Administration's request of $8.6 million for DOE wind energy R&D would keep the basic, fundamental R&D programs going, but would not provide for the Advanced Wind Turbine Initiative on a timetable that would make it commercially competitive at a time when we and the rest of the world is looking for sources of clean, abundant, and affordable energy. Therefore, Mr. Chairman and Members of the Subcommittee, the wind energy industry urgently asks that this Subcommittee recommend to the Committee and to Congress an appropriation for DOE's wind energy R&D programs of $11.0 million, with $9 million of that amount supporting fundamental Department of Energy research in wind energy and with $2 million being earmarked for continuation of DOE's Advanced Wind Turbine (AWT) project.

Additionally, AWEA encourages this Subcommittee to fund the Committee on Renewable Energy, Commerce, and Trade ("CORECT") at least at $2.5 million. CORECT serves an invaluable service when it coordinates Federal government activities that help promote renewable energy exports. Earlier, when using Denmark as one example of the international competition American turbine manufacturers face, it was pointed out that the world market for wind-powered generating equipment is growing very quickly. It should be kept in mind that CORECT is our nation's one coherent effort to assist American manufactures in exporting their technology.

Mr. Chairman and Members of the Subcommittee, this concludes my testimony and I will be glad to answer any questions that I can.

Comparative Wind Energy R&D Funding

Source: U.S. Department of Energy
Amounts are in millions of U.S. Dollars

1988

Government	Government Funding	Private Funding
Denmark	8.0	4.0
EC	13.0	13.0
Germany	16.5	4.0
Italy	15.0	3.0
Japan	?	?
Netherlands	23.6	4.0
Sweden	3.4	- 0 -
U.K.	10.0	3.0
U.S.	8.5	3.0

1989

Government	Government Funding	Private Funding
Denmark	8.0	4.0
EC	13.0	13.0
Germany	16.5	4.5
Italy	18.0	3.0
Japan	?	?
Netherlands	23.6	4.0
Sweden	9.4	- 0 -
U.K.	12.0	2.5
U.S.	8.8	3.0

U.S. Federal Appropriations for Wind Energy R&D

FY 1981:	$83.7 million
FY 1982	34.7 million
FY 1983:	31.4 million
FY 1984:	26.5 million
FY 1985:	29.1 million
FY 1986:	24.8 million
FY 1987:	16.7 million
FY 1988:	8.5 million
FY 1989:	8.8 million
FY 1990:	9.35 million (Adjusted to $9.1)
FY 1991	8.6 million (Administration Request)

THE U.S. DOE WIND TECHNOLOGY RESEARCH PROGRAM

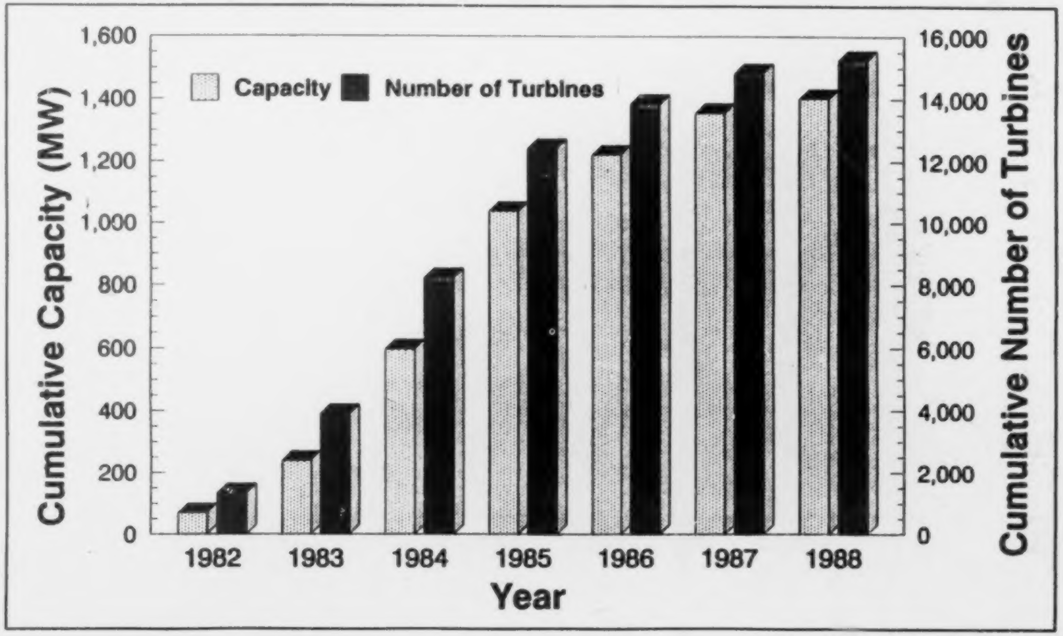
Presented to:

AWEA R&D Committee

December 5, 1989

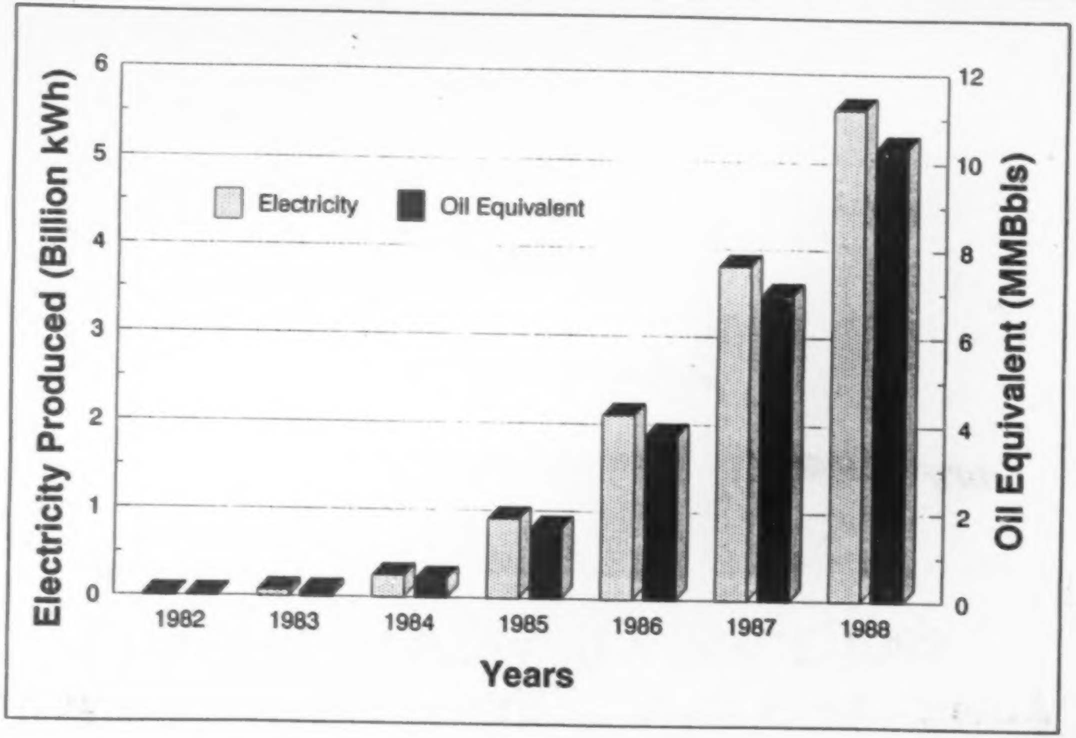
Leonard J. Rogers
Director, Wind/Ocean Technologies Division
U.S. Department of Energy

THE U.S. ALREADY HAS SIGNIFICANT WIND CAPACITY CONNECTED TO THE ELECTRIC GRID

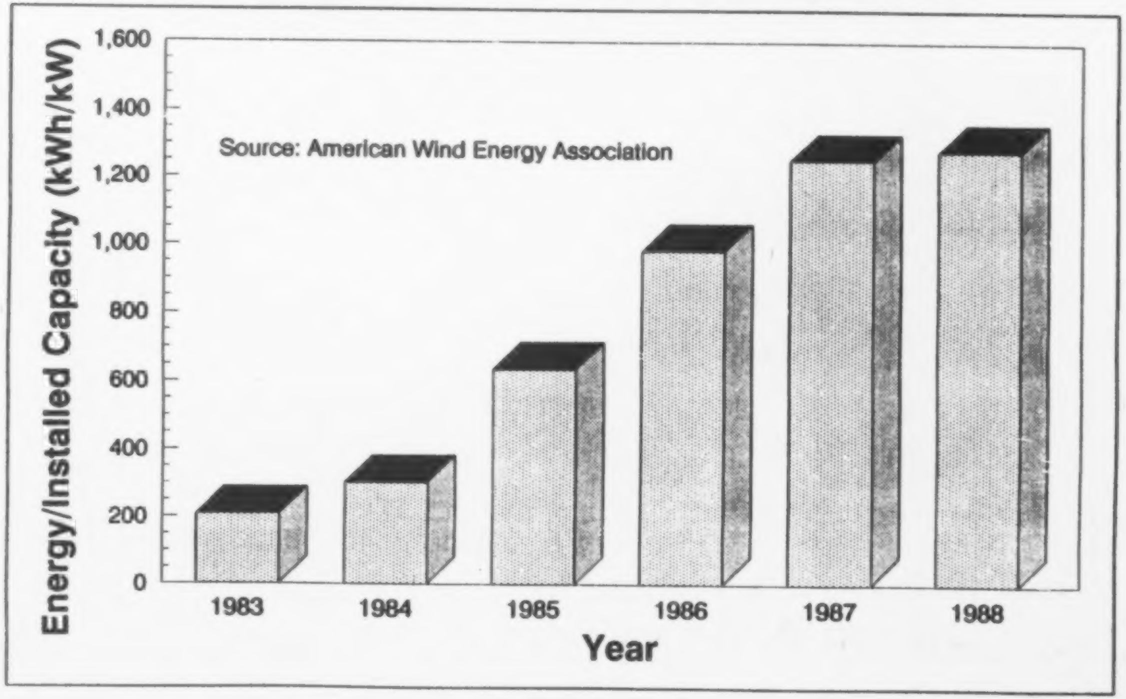


Note: Numbers include replaced/retired turbines

WIND SYSTEMS ARE DISPLACING OIL AND GAS

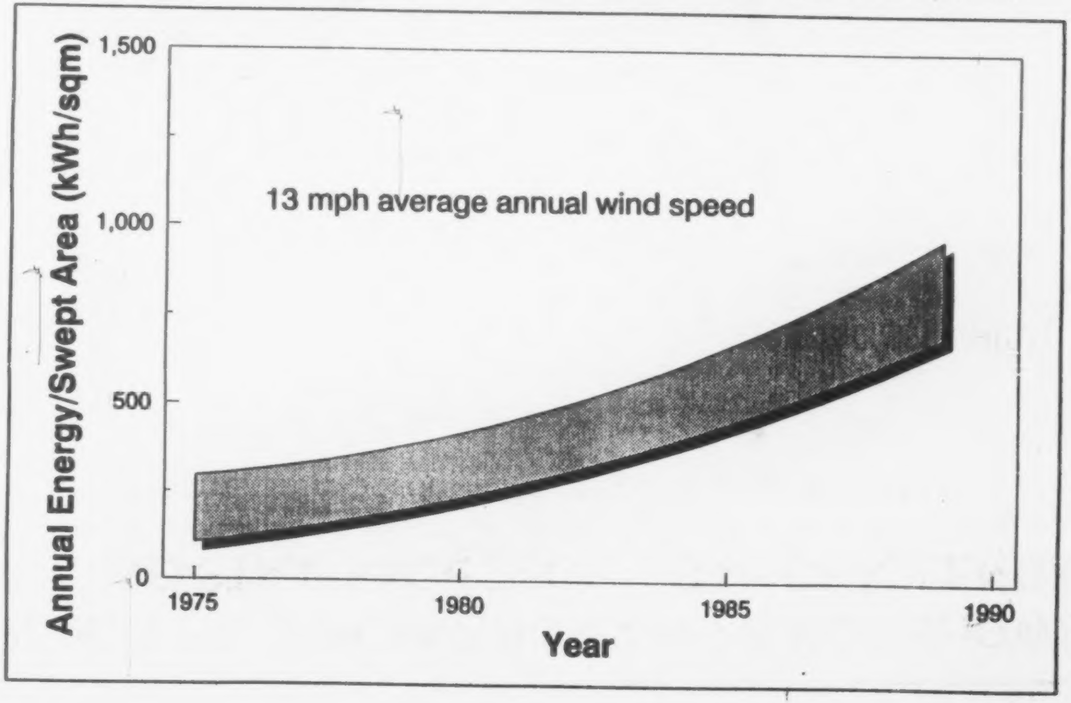


WIND TURBINE PRODUCTION EFFICIENCY HAS RISEN STEADILY SINCE 1983



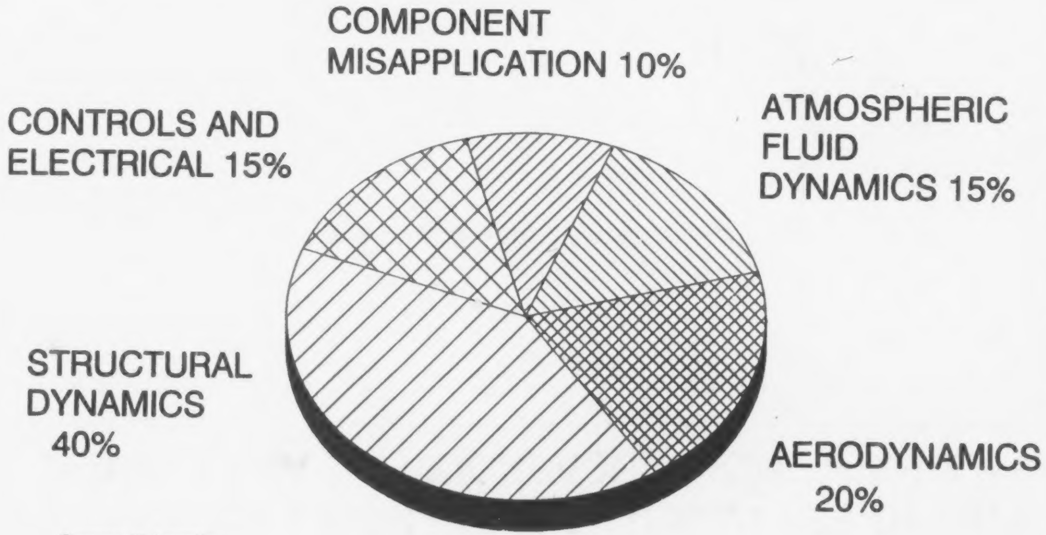
Source: American Wind Energy Association

ENERGY PRODUCTION PER SQUARE METER OF ROTOR SWEPT AREA HAS INCREASED SIGNIFICANTLY



HOWEVER...OPERATING EXPERIENCE SHOWS THAT WE STILL FACE TECHNICAL CHALLENGES

Relative Contribution Of Problems To Lost Production



Source: R. Lynette

THE U.S. DOE WIND RESEARCH PROGRAM IS RESPONDING TO THESE OPPORTUNITIES

PROGRAM OBJECTIVE:

To establish a technology base to allow industry to develop cost-effective machines as an energy supply alternative.

RATIONALE:

- A large world-wide resource exists
- Local high wind areas intensify resources
- Advances needed to resolve technical issues and significantly improve performance appear feasible
- Industry is small and under-capitalized with limited ability to invest in key research and development areas

THE COST OF ELECTRICITY IS CALCULATED FROM THREE TECHNOLOGY-RELATED PARAMETERS

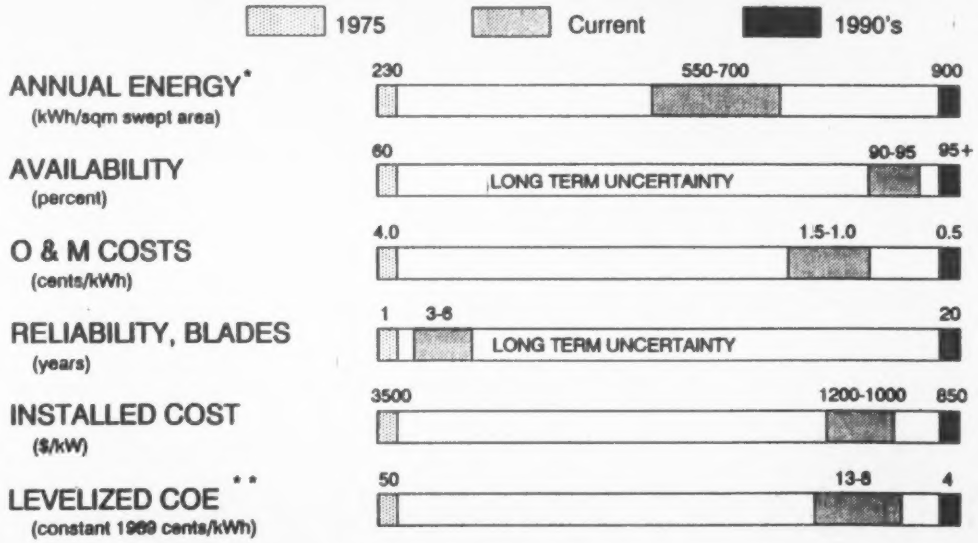
$$\text{COE} = \frac{\text{FIXED CHARGE RATE} \times \text{CAPITAL COST}}{\text{ANNUAL ENERGY}} + \text{O\&M COST}$$

The Fixed Charge Rate is a Financial Factor
That Depends on the Current Financial Climate

DOE'S PROGRAM IS RESPONDING TO THESE TECHNICAL CHALLENGES

- SHORT-TERM
  - Understand Current Technical Problems
  - Emphasize Structural Integrity And Lifetime
  - Provide Solution Tools To Industry
- LONG-TERM
  - Develop Advanced Capabilities In Wind Power Kinetics
  - Advanced Energy Capture Technology
  - Advanced Turbine Technology For Moderate Wind Sites

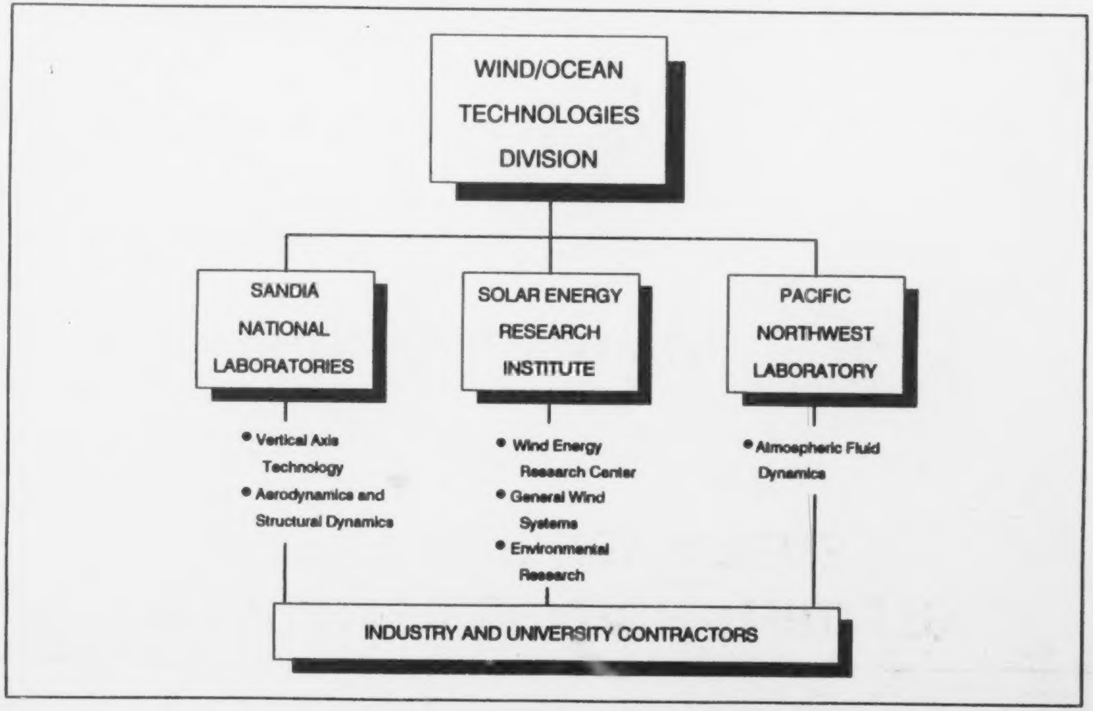
TECHNOLOGY STATUS: KEY TECHNICAL PARAMETERS



* For 13 mph wind site at 10 meter height, all losses are included

** Based on utility economics

WIND PROGRAM ORGANIZATION



WIND/OCEAN TECHNOLOGIES DIVISION

SANDIA NATIONAL LABORATORIES

- Vertical Axis Technology
- Aerodynamics and Structural Dynamics

SOLAR ENERGY RESEARCH INSTITUTE

- Wind Energy Research Center
- General Wind Systems
- Environmental Research

PACIFIC NORTHWEST LABORATORY

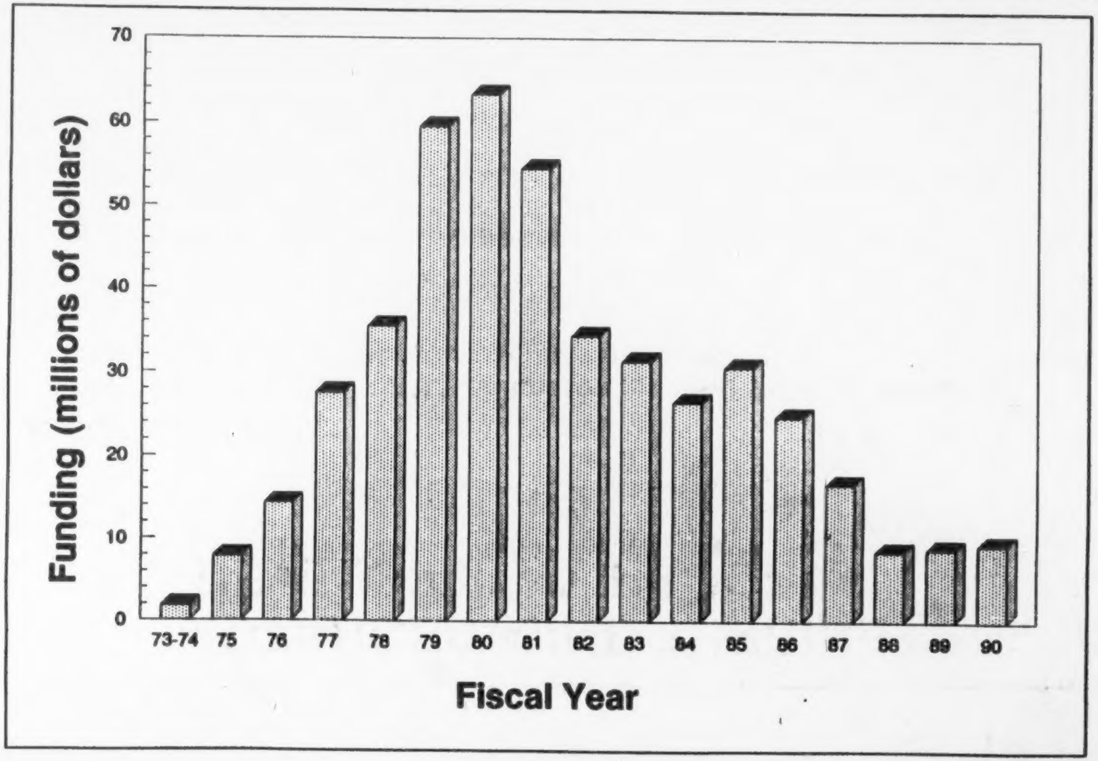
- Atmospheric Fluid Dynamics

INDUSTRY AND UNIVERSITY CONTRACTORS

PROGRAM RESEARCH THRUSTS ARE IN FIVE KEY AREAS

- Atmospheric Fluid Dynamics
- Aerodynamics
- Structural Dynamics
- Advanced Components
- Electrical Systems Testing

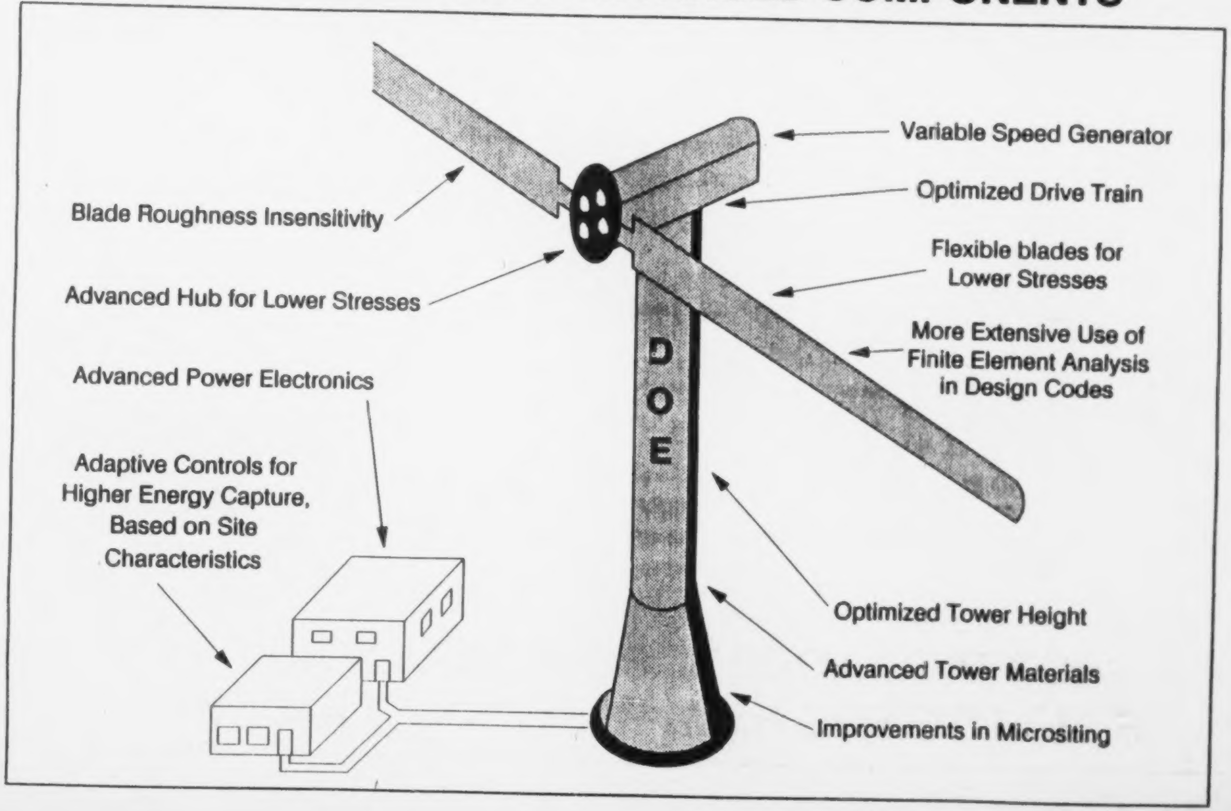
FEDERAL WIND ENERGY PROGRAM FUNDING



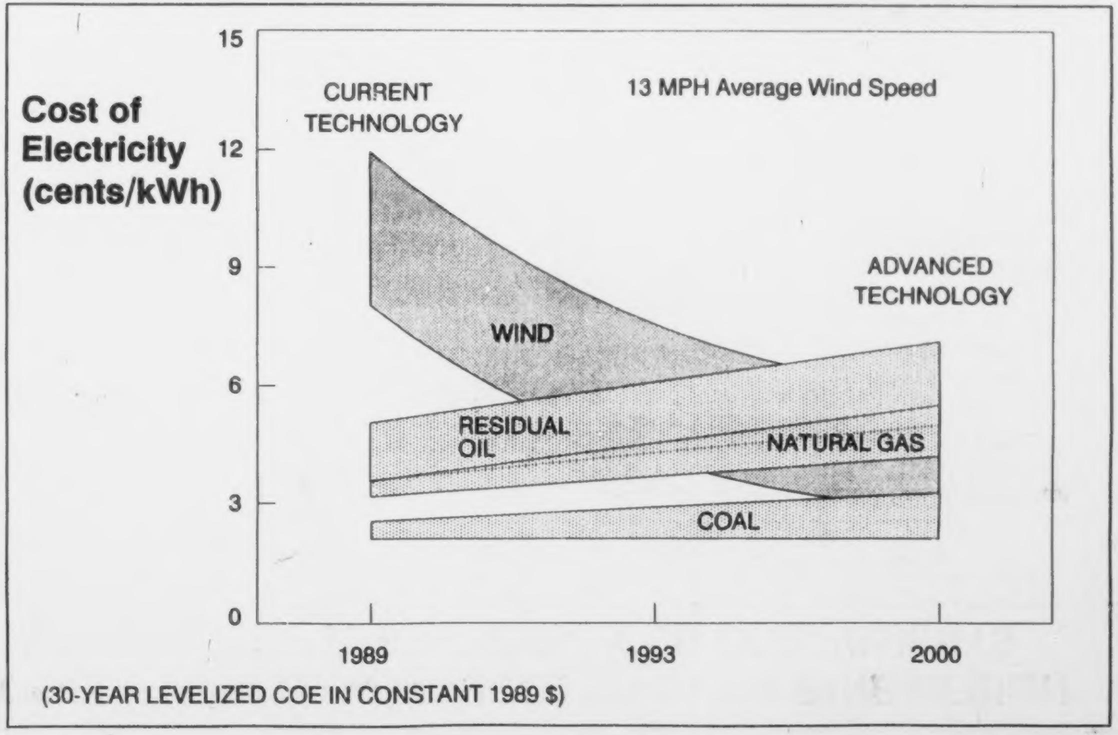
ADVANCED WIND TURBINE DEVELOPMENT PROGRAM

- **OBJECTIVE**
  - Advance the state of U.S. commercial wind turbines through DOE-industry cooperative design program
- **PROGRAM PLAN**
  - Produce at least two turbines through use of advanced technology and integrated design
  - Award development contracts in FY 1991 with completion of program in FY 1995
- **STATUS**
  - Industry proposals for design studies have been submitted to the Solar Energy Research Institute

DOE-SUPPORTED ADVANCED WIND TURBINE DESIGN MAY INCLUDE THESE ADVANCED COMPONENTS


Blade Roughness Insensitivity
Advanced Hub for Lower Stresses
Advanced Power Electronics
Adaptive Controls for Higher Energy Capture, Based on Site Characteristics
DOE
Variable Speed Generator
Optimized Drive Train
Flexible blades for Lower Stresses
More Extensive Use of Finite Element Analysis in Design Codes
Optimized Tower Height
Advanced Tower Materials
Improvements in Micrositing

WIND WILL COMPETE WITH FOSSIL FUELS AS ADVANCED TECHNOLOGY DEVELOPS



(30-YEAR LEVELIZED COE IN CONSTANT 1989 $)

SERI-1: ADVANCED TURBINE DEVELOPMENT

OBJECTIVE:

Assist industry with the basic configuration research necessary to develop advanced wind turbines that are competitive in world markets.

TECHNICAL APPROACH:

- Initiate 2 or 3 conceptual design studies with industry participants to identify improvements to existing designs for the near term, and to explore new, advanced turbine designs, utilizing concepts such as variable speed operation, rotor load reduction strategies and new rotor and hub configurations.
- Analyze the advanced concepts for performance, dynamic loads, and fatigue life using recently developed and validated tools.

OUTPUT:

In the near term, this research will provide the industry with new and improved insight into advanced designs and will provide new solutions for existing problems. In the near term, this research will accelerate the development of new advanced configurations capable of competing in the world market at moderate (less than 13 mph average) wind sites at a cost of less than $.03/kWh.

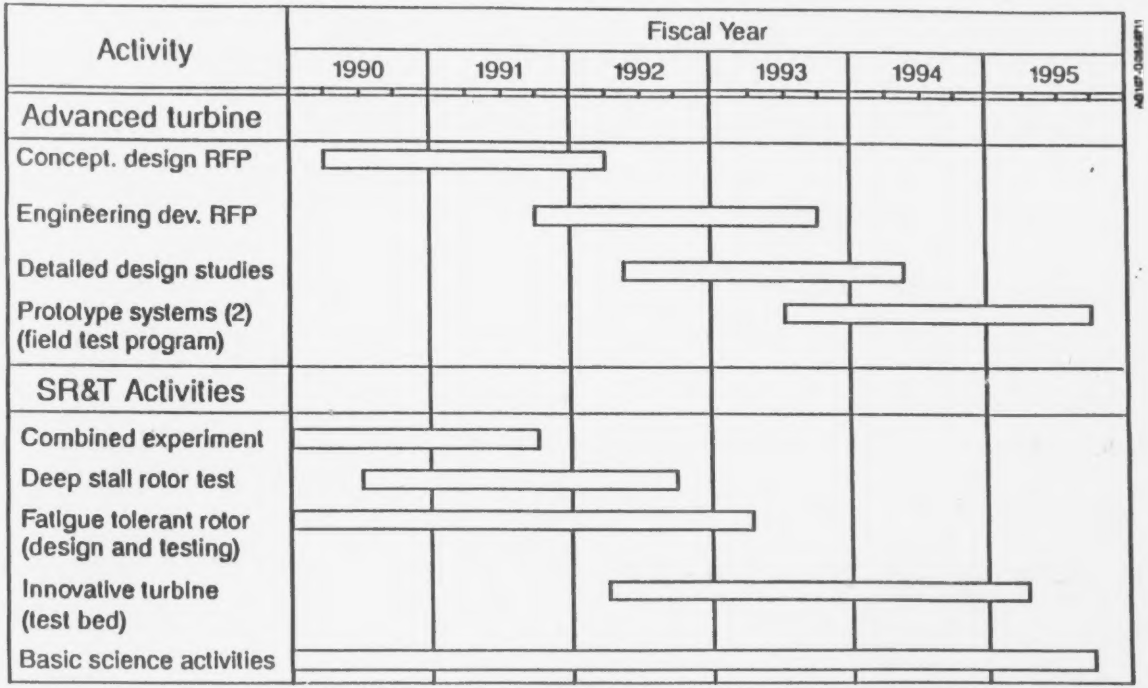
STATUS:

- The RFP was released in May, 1989 to over 50 potential companies.
- Several high quality proposals were received at SERI by the September 20th deadline.
- The technical review process is underway.

FUTURE PLANS:

- The selected proposers will be notified early in January 1990 and contracts negotiated.
- All of the contract awards are scheduled to be complete by July 1990.
- SERI will manage the conceptual design studies with support from SNL and PNL.
- SERI is initiating in-house studies of key configuration trade-offs and design options in parallel with contracted studies.
- Validation and refinement of the tools that will be used to support the industry initiative is underway:
    - The FLAP code is being refined to predict rotor loads under turbulent wind conditions for different rotor configurations.
    - Commercially available software is being selected to perform finite element analysis.
    - Fatigue life will be estimated using the LIFE II software and commercial software.
    - The PROPSH code will be used to predict performance.

A Proposed Advanced Turbine Development Program



WIND PROGRAM BUDGET PROJECTIONS

	FY90	FY91	FY92	FY93	FY94	FY95	Program Totals
ADVANCED TURBINE DEV							
Conceptual Design (3 contacts)	1.0	.4					1.4
Eng. Development RFP (Testing-Lab & Field)		1.0	3.0				4.0
Detailed Design RFP (2 prototypes)			2.0	4.0			6.0
Prototype System Fab (Cost sharing)				1.0	5.0	5.0	11.0
SR&T ACTIVITIES							
Combined Experiment	.7	.4					1.1
Deep Stall Adv. Rotor	.3	.7	.5				1.5
Fatigue Tolerant Rotor	.5	1.5	1.5	1.5	1.0	1.0	7.0
Innovative Turbine SERI TEST BED	-	-	1.0	1.5	2.0	2.0	6.5
Basic Science Activities	6.6	8.0	8.0	8.0	8.0	8.0	46.6
YEARLY TOTALS	9.1	12.0	16.0	16.0	16.0	16.0	

American Wind Energy Association

March 30, 1990
FOR IMMEDIATE RELEASE
FOR FURTHER INFORMATION CALL: Randy Swisher or Earl Kelly at 703-276-8334;
or Paul Gipe at 805-822-7956

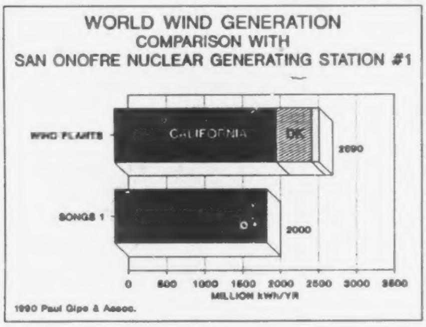
WIND ENERGY IN THE 80s -- A DECADE OF DEVELOPMENT

Wind energy came of age during the 1980s, emerging from the domain of government research and backyard inventors. After a sputtering start following the oil embargoes of the 70s, the industry grew dramatically in the 80s. Not since it was harnessed to power the world's sailing ships and pump water from the lowlands of Northern Europe has wind energy been employed on such a grand scale as it is today in California and Denmark.

The wind industry's tremendous growth during the 1980s has pushed the technology beyond the theoretical stage and into commercial reality. Wind's success in California, Hawaii, and Denmark demonstrates that the technology works, and that it can produce sizable amounts of electricity which can be readily integrated into conventional utility systems. Wind energy's rapid progress during the 1980's has also shown that the technology is now economically competitive. In short, wind energy has matured and is now ready to take its place among conventional energy resources as a clean, reliable source of electrcity.

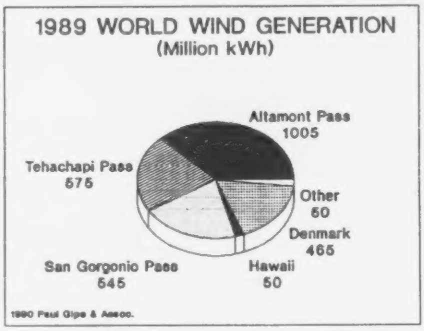
Progress Worldwide

Wind energy is the most successful solar-electric technology to result from the scramble to develop alternative forms of energy during the 70s. Today wind turbines worldwide generate as much electricity as that produced by a medium-size nuclear reactor or a coal-fired power plant.



1990 Paul Gipe & Assoc.

Wind turbines now provide commercial bulk power in California, Hawaii, Denmark, the Netherlands, and India. California accounts for 80% of the world's wind generation; Denmark produces much of the remainder.



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Progress in California

Unquestionably wind energy has made its most significant contribution in California. With 11% of the country's population and the world's sixth largest economy California is both a major producer and consumer of energy.

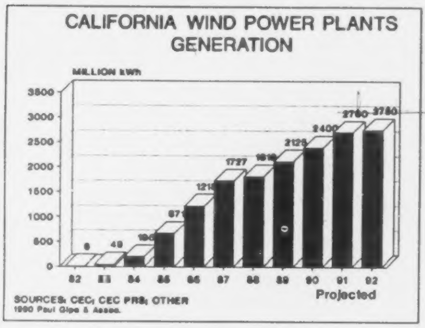
Because of the progressive policies adopted during the late 1970s and early 1980s, California has become a world model for renewable energy development. More than 10% of the state's electricity is produced by such alternative sources as

-more-

wind, solar thermal, photovoltaics, geothermal, and biomass. In excess of $2.5 billion has been invested in wind energy alone.

In 1989, for the first time, California's wind generation exceeded two billion kilowatt-hours. Today California's wind turbines generate enough electricity to meet the residential needs of over 900,000 people--more than the population of San Francisco or Washington, D.C.

By the mid 1990s sales of wind generated electricity to the state's largest electric utilities Southern California Edison Co. (SCE) and Pacific Gas & Electric Co. (PG&E) are expected to near three billion kWh, enough electricity for more than one million people.


CALIFORNIA WIND POWER PLANTS GENERATION

SOURCES: CEC; CEC PRS; OTHER
1990 Paul Gipe & Assoc.

During 1989 these wind power plants, as the arrays of multiple wind turbines are known, produced

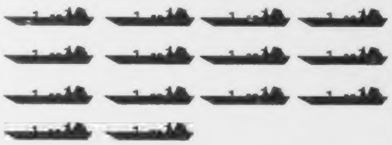
- o 1.2% of PG&E's estimated consumption,
- o 1.5% of SCE's estimated consumption,
- o as much electricity as that produced by California's oil-fired power plants,
- o as much electricity as that saved by all residential building and appliance standards from 1977 to 1985,
- o nearly as much as that imported to California from British Columbia Hydro in a typical year,
- o about one-third of imports to California from Southwest coal and nuclear plants.

California's wind plants effectively save the energy equivalent of 3.5 million barrels of oil per year that would have otherwise been needed to generate the same amount of electricity in a conventional power plant.

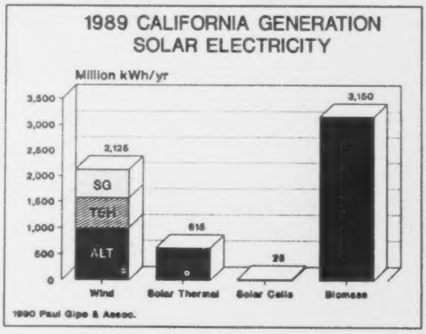
If used for transportation 1989's wind generation would have nearly equaled the South Coast Air Quality Management District's estimate of the amount of electricity needed to power the first phase of electric vehicle use in the Los Angeles Basin.

CALIFORNIA WIND GENERATION
PRODUCES THE ENERGY EQUIVALENT OF
3.5 MILLION BARRELS OF OIL

OR 14 TIMES THE EXXON VALDEZ OIL SPILL



Wind generation has been characterized by the Chairman of the California Energy Commission, Charles Imbrecht, as a "remarkable success story" in the state. George Maneatis, President of Pacific Gas & Electric Co., has called wind one of the most successful forms of alternative energy developed in California. And a PG&E study has found that "wind energy will become the most economic new base load source by the year 2002."


1989 CALIFORNIA GENERATION SOLAR ELECTRICITY

1990 Paul Gipe & Assoc.

California's wind plants are privately owned and operated, and range in size from only a few wind turbines to as many as several thousand. They are concentrated in three mountain passes: Altamont, east of San Francisco; Tehachapi, northeast of Los Angeles; and San Gorgonio, east of Los Angeles. Wind power plants have also been built in Solano County near the confluence of the San Joaquin and Sacramento Rivers, and in the Pacheco Pass southeast of San Francisco.

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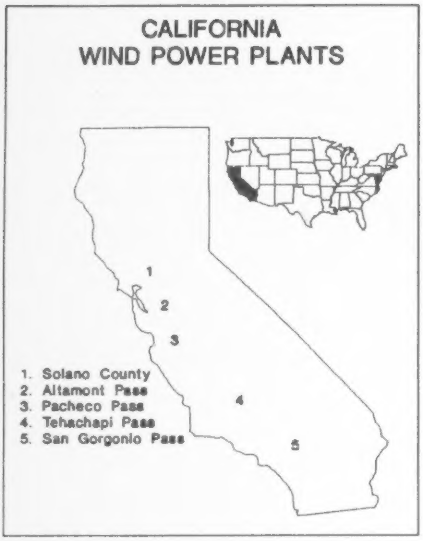
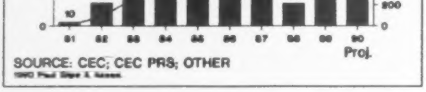

CALIFORNIA WIND POWER PLANTS

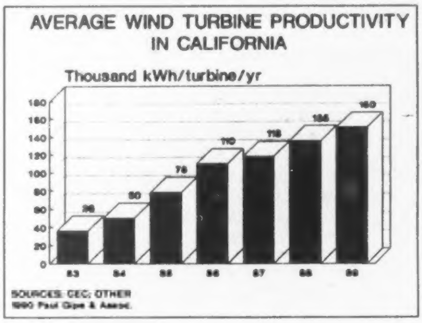
Progress in the Technology

Wind energy continues to expand not only in California and Denmark, but in other countries as well because improvements in the technology have led to greater reliability and productivity at lower costs than was possible only a few years ago. The turbines installed during the past decade provide a large base upon which the technology has been able to build. There are now more than 14,000 wind turbines, representing nearly 1,350 Megawatts (MW) of generating capacity, operating in California. Another 2,400 turbines operate in Denmark.


CALIFORNIA WIND POWER PLANTS
CAPACITY INSTALLED

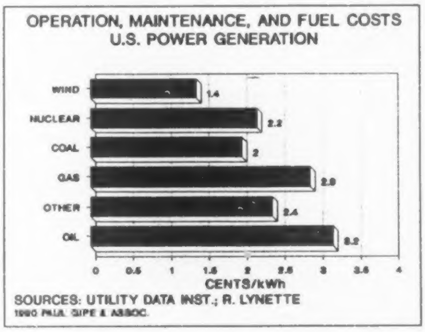
SOURCE: CEC; CEC PRS; OTHER
1990 Paul Gipe & Assoc.

With the experience gained from these turbines the industry has steadily increased performance not only by refining the design of new wind turbines but also by improving the operation of existing ones. Today, turbines in better performing projects are available for operation about 95% of the time.


AVERAGE WIND TURBINE PRODUCTIVITY IN CALIFORNIA

SOURCES: CEC; OTHER
1990 Paul Gipe & Assoc.

Wind plants, like other forms of solar energy, are capital intensive. But they are less costly to operate, maintain, and fuel than conventional power plants. Wind plants cost about 1.4 cents/kWh (about half that of coal and nuclear) to operate and maintain.


OPERATION, MAINTENANCE, AND FUEL COSTS
U.S. POWER GENERATION

SOURCES: UTILITY DATA INST.; R. LYNETTE
1990 PAUL GIPE & ASSOC.

The cost of California's wind energy compares favorably to the cost of more conventional sources of electricity, such as nuclear power. According to a recent report by the Department of Energy, the cost of wind-generated electricity at excellent sites (16 mph) should cost from 5 to 7 cents/kWh, and at sites typical of the Great Plains (14-16 mph), from 6 to 9 cents/kWh.

The staff of the Northwest Power Planning Council estimates that there are enough windy sites in the Pacific Northwest to produce nearly ten times the electricity generated by California's

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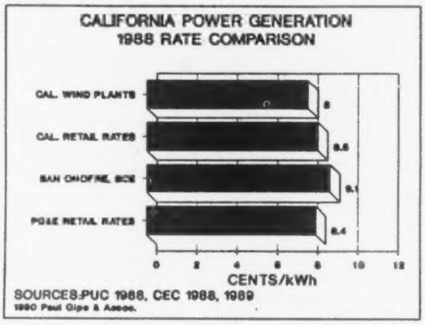
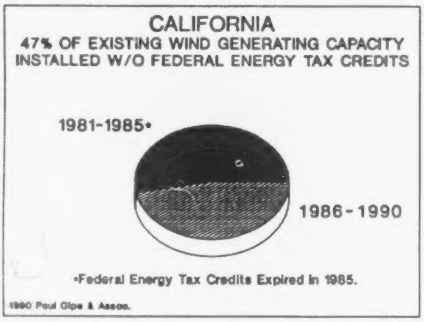
wind plants at a cost competitive with conventional power plants burning coal.


CALIFORNIA POWER GENERATION
1988 RATE COMPARISON

SOURCES:PUC 1988, CEC 1988, 1989
1990 Paul Gipe & Assoc.

Because of improved cost effectiveness wind turbines continue to be installed despite the loss of tax credits that spawned the industry's development. Nearly half of today's wind generating capacity in California has been installed without federal energy tax credits.


CALIFORNIA
47% OF EXISTING WIND GENERATING CAPACITY
INSTALLED W/O FEDERAL ENERGY TAX CREDITS

•Federal Energy Tax Credits Expired in 1985.

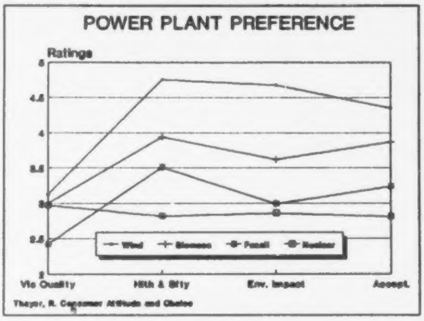
1990 Paul Gipe & Assoc.

Progress in Improving Air Quality

Wind energy is not only renewable, it's also a source of clean, non-polluting electricity. Unlike conventional power plants, wind plants emit no air pollutants, or greenhouse gases. In 1989 California's wind power plants offset the emission of more than 2 billion pounds of carbon dioxide, and 13 million pounds of other pollutants that would have otherwise been produced. It would take a forest of from 90 to 175 million trees to provide the same air quality benefit.

Progress in the Future

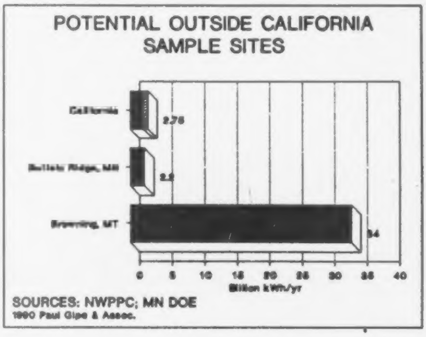
Though wind energy isn't without critics, numerous public opinion surveys have consistently shown that the public prefers wind energy over conventional sources of generation, and over some forms of alternative energy as well. This preference is most marked with respect to health and safety, and environmental impact. It's this preference for a clean, renewable resource that will assure continuing expansion of wind energy.


POWER PLANT PREFERENCE

Thayer, R. Consumer Attitude and Choice

Though currently wind energy produces only 0.1% of the nation's electricity, it could produce a significantly greater amount during the next decade. Recently the Department of Energy estimated that by the year 2000 wind--with business as usual--could supply 10 times more electricity than produced in California today.

Realistically wind could meet 5-10% of the nation's electricity supply. The Great Plains contains a tremendous wind resource. One ridge in Southwestern Minnesota could produce as much wind-generated electricity as that produced in California today. And just one site in Montana could provide 17 times California's current wind generation.


POTENTIAL OUTSIDE CALIFORNIA
SAMPLE SITES

SOURCES: NWPPC; MN DOE
1990 Paul Gipe & Assoc.

TUESDAY, APRIL 3, 1990.

PHOTOVOLTAICS

WITNESSES

HON. THOMAS R. CARPER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF DELAWARE

ALLEN BARNETT, PROFESSOR, DEPARTMENT OF ELECTRICAL ENGINEERING, UNIVERSITY OF DELAWARE

Mr. BEVILL. I see our colleague, Tom Carper. I know you need to get back to your busy schedule.

Mr. CARPER. I have a certain sense of "deja vu" here. I suspect you do as well.

Thank you, Mr. Chairman and Members of the committee for the chance to stop by today. I think you may recognize this fellow to my left, Allen Barnett from Newark, Delaware. He has been before you a number of times in the past. We are proud in Delaware of the progress that AstroPower has made in photovoltaic research and development and now are beginning to move to manufacturing.

The subcommittee has been supportive of their efforts, and we are now about to see an administration which thinks this is an important area and an interesting new initiative, a modest new initiative but one that is going to get us into manufacturing. All the money that you have invested, we have invested as a country. The research and development is now going to pay off for us in handsome ways.

I am happy to be here with Allen and to reintroduce him to your subcommittee.

Thank you, Mr. Chairman.

Mr. BARNETT. Thank you, Tom.

I appear before this committee to talk about a solar cell which is a crystalline silicon solar cell which has the high performance and stability, but we do it in thin film form. I came here in 1985 and said this would be a high-tech approach. This committee authorized support of it. It took me until 1987 to get the Solar Energy Research Institute to agree to let the money flow.

Since that time all thin film research had good growth and good growth in performance. Ours has passed them rapidly in 1987, coincident with receiving support. In fact, at this time I have the first prototype of a commercial module. The time it took us from the laboratory demonstration of a little one square centimeter guy to this thing is less than three years. The new Department of Energy manufacturing initiative hopes to get the average time from ten years down to six years. We are all for that manufacturing initiative, but we think the high-tech approach gets it a lot faster.

It has cost us $5.1 million to get there, which the Department of Energy put up 32 percent. We appreciate that 32 percent. We think another advantage of the high-tech approach, one, it is a manpower approach, not a high dollar, high capital approach. It gets there faster and cheaper. It is now recognized this approach makes a lot of sense. In fact, MITI of Japan and the Sunshine Project gives

Mitsubishi a half million dollars a year to reproduce that AstroPower results.

Last year we got $600,000. With the manufacturing initiative, we think we will do okay this year. We presently have 78 employees. Of those we have 45 are technical professionals. I think that is what separates us. We have a strong technical engineering staff. I don't believe there is anybody else in the world in this related technology with as many technical professionals.

Our plan is to ship three megawatts next year, which will make us the second largest U.S.-owned company and the fifth largest in the world.

Our last comment is a key to our success has been the work that has been done for us by the Sandia National Laboratories. We can't afford some of the very exotic equipment that you need to do detailed analysis. We send samples to them and get back very detailed reports. We get a lot of help towards directing our development. We think that is a major reason why we have gone so rapidly.

We would like to thank you for your past support and hope you can continue in the future. Thank you.

Mr. BEVILL. Thank you for your fine statement. We will work with this.

[The statement of Mr. Barnett follows:]

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DEPOSITED POLYCRYSTALLINE SILICON FILM SOLAR CELLS

Testimony for the Subcommittee on
Energy and Water Development Appropriation
Committee on Appropriations
United States House of Representatives

by

Allen M. Barnett, Professor
Electrical Engineering Department
University of Delaware
April 3, 1990

Deposited film polycrystalline silicon solar cells have demonstrated their potential as cost-effective, high performance photovoltaic solar cells for the direct conversion of sunlight to electricity. The first laboratory-size Silicon-Film solar cells with efficiencies over 10% were demonstrated in 1987, followed by laboratory efficiencies of 15.7% in 1988 and commercial-size prototypes in 1989. The pilot scale manufacturing equipment is presently being completed with the first power modules scheduled for delivery in this calendar quarter. The total cost to reach this level has been $5.1 million with 32% borne by the U.S. Department of Energy through Sandia National Laboratories. This Silicon-Film approach has surpassed the accomplishments and expectations of most of the older thin film technologies. Continued support of this technology is required for this United States invented and developed technology to provide a cost-effective alternate source of clean electricity.

It is recommended that the Committee provide an additional $2.5 million for the advanced development of deposited polycrystalline silicon films on low cost, photovoltaically inactive substrates, such as ceramics and for the acceleration of the manufacturing technology for high performance, cost-effective deposited polycrystalline silicon film solar cells for power applications.

The effective and strong role played by Sandia National laboratories in the support of industry, both manufacturers and users, must be encouraged and expanded if photovoltaics is to make an important contribution to the electricity supply in this decade.

Thin film crystalline silicon solar cells will always demonstrate higher efficiencies than similar thick silicon solar cells provided they include light trapping. These thin silicon solar cells will also lead to substantially lower costs.

Crystalline silicon solar cells have demonstrated the high performance, efficiency and reliability required to serve power generation markets. The remaining barrier is cost. Low costs can be achieved by depositing polycrystalline films of silicon on low cost substrates. The addition of light trapping will lead to higher efficiency than can be achieved with thick silicon wafers.

This high efficiency light trapping design will lead to cost-effective commercial power products that exceed the performance requirements of the power generation industry. This is a high technology solution to the problem of low-cost, high-performance solar cells. The device design approach is based on detailed analytical models which predict new optical and electronic device designs. This approach can be efficiently applied to the traditional semiconductor materials, silicon and gallium arsenide. The device design approach, which drives the development of new technology, is typical of that required for any new semiconductor device developed for the electronics industry. Examples of sophisticated device designs are those which led to the development of the integrated circuit, semiconductor memory, computers-on-a-chip, semiconductor lasers and optical communications.

This Committee has authorized support of this promising Silicon-Film solar cell since FY 1985, although it was June 1987 before we were able to overcome the objections of the Solar Energy Research Institute and receive our first small contract. During that period, the licensee of the University of Delaware's invention, AstroPower Division of Astrosystems, Inc, and now its successor, AstroPower, Inc. has achieved:

> First demonstration of a laboratory-size deposited film crystalline silicon solar cell with 10% efficiency in 1987.
>
> Demonstration of 15.7% efficiency for a laboratory solar cell in 1988.
>
> Demonstration of a commercial size solar cell with an efficiency of 10.9% in 1989.
>
> Start-up of a 300 KW capacity pilot scale production machine in 1990.

This is the first mini-module made with solar cells from this production machine.

It is now recognized that the Silicon-Film technology developed with the support of this Committee is a leading approach for large scale power generation. A clear endorsement of the Silicon-Film approach comes from Japan where MITI, through the Sunshine Project, supports a $1.5 million per year program with Mitsubishi to reproduce the AstroPower results. AstroPower received $600 thousand last year from the Department of Energy through Sandia. Nonetheless, we still retain a substantial lead.

AstroPower presently has 78 employees, including 45 technical professionals. This is probably the largest group of technical professionals working on advanced product development and manufacturing in the world. There are some similar size research organizations working on new materials with the support of SERI. AstroPower will ship 500 KW this year and plans to ship more than three megawatts next year. In 1991, AstroPower will be the second largest United States owned photovoltaic company in terms of shipments to power markets and the fifth largest in the world.

A key to AstroPower's success has been the technical as well as financial support from Sandia National Laboratories. They have provided in depth analysis of solar cell performance which has led to a more efficient use of our development resources and more rapid progress. They have taken this constructive position since the program began in 1987. Sandia is mission-oriented and therefore well equipped to deal with and contribute to new ideas and new solutions -- particularly those that will further the mission of developing photovoltaics for electric power.

The United States has regained the lead in the manufacture and sale of solar cells. Japan directed its resources (and SERI followed) to trying to force amorphous silicon on power markets. Meanwhile, the market chose crystalline silicon for its much higher performance and its reliability. The U.S. has a strong position in crystalline silicon and Sandia is providing major technical assistance to all of industry.

The proposed new manufacturing initiative can provide significant assistance to our industry, and allow us to maintain our lead in spite of the larger budgets in Germany and Japan. This initiative must be directed toward power applications. It is essential that Sandia be given the strongest possible role based on their demonstrated success in the new manufacturing initiative and in the engineering development of products that are close to the market place.

The promise of this new Silicon-Film solar cell can be realized through continued support of the advanced product development program. Our lead can be insured through the implementation of the proposed manufacturing initiative.

TUESDAY, APRIL 3, 1990.

SOLAR ENERGY

WITNESS

SCOTT SKLAR, EXECUTIVE DIRECTOR, SOLAR ENERGY INDUSTRIES ASSOCIATION

Mr. **BEVILL.** Next, we have Mr. Scott Sklar. Good to hear from you.

Mr. **SKLAR.** Always a pleasure to be before you.

Solar Energy Industries Association is the national trade association of the passive solar, photovoltaic and solar thermal manufacturers. I want to just relate to you where we are with the administration's request and the technology.

First, I brought a picture of a project in Alabama. It is a great project in the great State of Alabama on photovoltaics. This is thin film technology that we have been promoting like Astropower before us. The fact of the matter is that OMB has agreed for an $8 million increase over current funding levels for photovoltaics this year. The first time in a decade.

The reason they did is they believe that with the manufacturing initiative tied to the core program, we will be able to resolve bottlenecks in manufacturing to more mass produce this technology. The Japanese and West Germans who are getting into it and you may remember Siemens just bought out Arco-Solar. Canon just brought in a little less than 50 percent in Savonicks in Michigan.

The reason they are getting into it is that they see that manufacturing process technology is the way to bring the cost down. We believe that a three-year program tied to a consistent core budget the way we have negotiated with OMB and DOE, we can bring significant costs so that the utility sector, like PG&E, Jerry Braun who was here on the wind panel and others will start buying this technology fairly large scale.

They are buying it for two reasons. It still will be high-cost power but it will be high-cost power of the utility grid where bringing the line is far more expensive than buying photovoltaics or repowering the distribution network. Their little central distributor network on the grid, having to run lines in the ground to the transformers, would be far too expensive.

We see that as our market. It will be the market that propels us after the year 2000. Grid power, large scale but it is consistent and will keep the U.S. industry, U.S.

The other technology, high solar technology. You have been to the Loos plants, you know the work. They brought on the new 80-megawatt new technology. They are looking in Nevada and West Texas now. Finally, out of California. We have a second generation set of technologies using new reflective techniques and they are still having problems with—they are concentrating on the tubes that are clear.

We have pressure problems using the synthetic oil. We want to get it to water. We have the work that Westinghouse and John Deere is working with. These are joint ventures and we think if we maintain the joint ventures you will see the technology in the marketplace before 1995, more competitive than PV, slightly less competitive than Loos but able to be used all over the United States; not just in the Southwest.

The final technology is solar hot water. Here is a system on McDonald's it is a simple technology. Here the administration cut it from $4 million to $1 million. We are not thrilled with that and only to the impact that one, it gets this committee out of the building sector, which is 35 percent of your energy in the United States is to light and heating cold buildings. I don't think you should lose that jurisdiction. We have been in a four-year process to get the technology as part of the HUD and FHA minimum property standards.

It is simple technology, which is nothing new, mind you, DOE has helped us to enhance it, but it is a long time to get a product into what is called the Federal financing system; and if you give us some time with solar water heating and then following up with the, as a matter of fact, glass and electronics and some of the new technology that is exciting, you will see us in compliance.

The international program. It is a $1 million program. 80 percent of our technology goes to exports. It is the best bang for the bucks, supporting this interagency research. And if there is money above the core program we do support the SERI facility, but it must have solar on it. It would be horrible for the national solar laboratory not to use solar if it is cost-effective in its laboratory.

That is my pitch, sir. I think the industry would be very supportive.

Mr. BEVILL. A lot of progress is being made on solar. Solar is still the most popular source of energy as far as the Congress is concerned. We are delighted that you are continuing your research on it. Loos is the only one that I know of that is operating in the black.

Thank you for your fine testimony.

[The statement of Mr. Sklar follows:]

1989

SEIA

SOLAR ENERGY INDUSTRIES ASSOCIATION Suite 610 1730 North Lynn Street Arlington, Virginia 22209-2009 (703) 524-6100
FAX: (703) 527-2833

TESTIMONY

by

SCOTT SKLAR
EXECUTIVE DIRECTOR
SOLAR ENERGY INDUSTRIES ASSOCIATION

before

HOUSE APPROPRIATIONS COMMITTEE
ENERGY & WATER DEVELOPMENT SUBCOMMITTEE

APRIL 3, 1990
WASHINGTON, D.C.

SOLAR ENERGY INDUSTRIES ASSOCIATION

INTRODUCTION

The Solar Energy Industries Association (SEIA), the national trade organization of the passive solar, photovoltaic, and solar thermal manufacturers and component suppliers, urges the Subcommittee to support the FY'91 Administration requests for photovoltaics ($43 million), solar thermal ($19 million) and international ($1.5 million). However SEIA requests a $3 million increase for the solar buildings research at the $4.0 million level.

SEIA also requests the Subcommittee's support of two important initiatives which have resulted in FY'91 Administration designated increases in photovoltaics and solar thermal detoxification, the first requests for solar research & development increases in a decade.

I have testified before this Subcommittee for years about the need for the United States to maintain an aggressive research effort in solar energy in order to maintain our international competitivess, launch new environtmentally-sound technologies into the marketplace, and to realize the multimillion development commitment on behalf of the American taxpayer who expects results from their investment begun in the 1970's.

For the first time in a decade, the United States imports more than half of its petroleum. Our international competitors have been investing far more than the United States in solar technological development in order to more radically cut their energy imports and to develop a comptetitive edge in the international markets.

The United States federal solar R&D programs have been very effective. In a true partnership with industry, the U.S. Department of Energy (DOE) photovoltaic program has advanced photovoltaic manufacturing and systems development which have made photovoltaics competitive in against remote diesel and propane fuels. DOE's solar thermal research has sucessfully conduced field tests of solar detoxification of harzardous wastes and we believe by the mid-1990's, the U.S. solar thermal industry will be able to supply components to mobile detoxification units. The solar buildings program has been mostly involved in testing, design and certification efforts to insure these important set of energy conservation technologies are integrated into buidlings by architects, federal building loan programs (FHA/VA), and federal/ state government procurement specifications.

1991

PHOTOVOLTAICS

The core research program has focussed on two basic areas of research. The materials research program on thin films, fundamental, and high-efficiency research, as a partnership of the industry and the Solar Energy Research Institute (SERI), are working in development of thin film photovoltaics that may be layered on glass or plastic. The research is essential to allow photovoltaic semiconductor materials to be cost-effectively manufactured in an assemblyline process. New combinations of materials are being combined to increase efficiency and maintain stability so that they do not lose efficiency/output over time.

The second research areas on collecyor and systems involves balance-of-systems issues that allow photovoltaics to be used in a conventional electric system for both remote power and utility-interconnected use. With assistance of the Sandia National Laboratory PV Design Assistance Center, components such as concentrators, invertors, and interconnection materials are being tested and design reviewed. Use of concentrators have increased photovoltaic efficiency to 37 percent in 1989, a world record. Inverters, which convert DC-electricity directly from the photovoltaic panels to AC-current used by the utility sector, are being tested for reliability and standardization. Actual hands-on experience in photovoltaics systems scale-ups at the PV/USA site in California provide real world experience in this regard.

Beyond the core $35.5 million photovoltaics research budget, a newly proposed Photovoltaics Manufacturing Initiative, seeks to accelerate the timeframe to more cost-effectively manufacture photovoltaics. The proposal on behalf of the industry would direct 80 percent of $8 million to assist the photovoltaic manufacturing sector in overcoming particular manufacturing scale-up problems, while the remaing 20 percent be focussed on a shared-research component for the U.S. industry to develop a glassless, frameless photovoltaic panel. Nearly half the costs of photovoltaics relate to glass, framing, and mounting which could be substantially reduced in such a commerclialization effort. The initiative would require an industry cost-share and include partners in the glass manufacturing and semi-conductor industries.

The core research program and the PV Manufacturng Initiative funded in aggregate at the $43.5 million level will allow photovoltaics to be absolutely cost-competitive with conventional energy sources in the 1990's.

SOLAR BUILDINGS

The two basic research activities covered by this program is in the active solar and passive solar areas. In passive solar, the research work has focussed on a design tool for use by architects and builders to utilize passive solar design and materials. This computer tool tied to existing research and design work at the Solar Energy Research Institute (SERI) should more quickly commercialize this technology. Additionally, the passive solar program has also spent time in development of new materials which includes new insulated wallboard and windows, and new electrochromic windows which change tinting with a small electric current. Through world-class work at Lawrence Berkley Laboratories, technological gains in glass may save more energy through its use in buildings than almost any new energy production technology.

In active solar, most of the research effort has been to enhance existing methods of solar system certification and testing so that they will conform to existing technical requirements in the FHA/VA housing loan programs. Once these systems meet the minimum technical requirements of FHA/VA and are expanded to FmHA and the private banking sector, then active solar heating will be commercialized in both the commercial and residential sectors. Additional research at the Florida Solar Energy Center to test solar cooling technologies will have significant impact throughout the United States which spends an ever-increasing portion of our energy dollar for space cooling.

The Administration proposes in FY'91 a $3.2 million cut from the FY'90 budget for a total solar buildings research effort of $1.0 million. The Subcommittee must determine that by going along with this recommendation, it will really no longer have jurisdiction over the solar buildings program. Note that the energy in the United States required to heat or cool buildings is a total of 35 percent of U.S. energy.

The industry believes that this program line-item should stand at least at $4.0 million to finish with the afore-mentioned tasks. The current reorganization at US/DOE to merge management of the Solar Building and Community Building Systems (funded through Interior Appropriations) programs will insure that the research is not duplicated but rather mutually-supportive.

SOLAR THERMAL POWER

The solar thermal power program is one of the most underrated parts of the solar research effort. The research focusses on three basic program areas. Solar trough technology, which converts sunlight onto a line focus to create steam for industrial process heat or electricity, receives a small part of the research dollars mostly for use of new stretched-membrane technology. Greater effort is needed to advance this technology which is already commercialized and produces 300 megawatts of electricity in California. Enhancements of this technology should cut costs from the current costs of $.08 - $.12 per kilowatt hour (kwh) to under $0.6 per kwh in the 1990's which would make it absolutely competitive with conventional energy.

The second field of research is on the use of solar concentrator, reflector dishes which focus sunlight on external combustion engines which turn electrical generators. Nearly 20 megawatts of this technology has been demonstrated on utility grid inter-connected systems. Joint ventures to finally commercialize this technology is underway but the U.S. government has not met its commitment to consummate this area of research. The industry strongly recommends that resources be directed to Sandia National Laboratories and the industry to finish the last leg of research necessary to bring this technology competitively into the marketplace.

Research into central receiver technology, where fields if heliostats (solar reflectors) are pointed towards a central tower to create steam, has been limited to work on stretched membrane heliostats, on par with the stretched-membrane dishes from the dish/engine program. Scale-ups of these dishes and heliostats are being currently tested. Industry is interested in a cost-shared project to scale-up this technology in cooperation with the utility sector.

The final area research has been on the use of solar concentration to detoxify water-based toxins such as dioxine, solvents, and other hazardous substances. Field tests have been conducted at Sandia National Laboratories to prove this new breakthrough and the Solar Energy research Institute has developed a new test facility to support these advances. Not only does this new field have the potential to truly assist in solving a major national problem, but this near-term market in the mid-1990's will provide an important market niche for the advanced solar thermal components (dish and trough concentrators) developed through support of the federal research program with the U.S. industry.

The industry believes the Solar Detoxification Initiative proposed by the Administration for FY'91 of $8 million which increases the FY'90 program by $4 million totalling ($19 million) is an important commercialization strategy. However, we believe that the program implementation should be shared equally between SERI (pure research) and Sandia National Laboratories (applied research). And while the industry believes that the Initiative is an ambitious and worthy project, it should not supercede the core research program to enhance troughs, commercialize dish/engines, and support a central receiver joint venture.

INTERNATIONAL

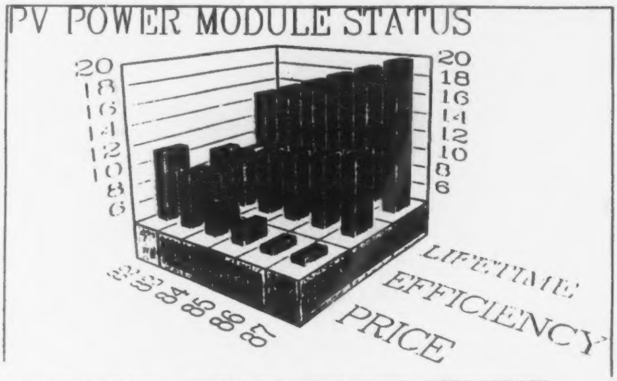
The $1.0 million program which supports the federally-mandated Committee on Renewable Energy Commerce and Trade (CORECT) deserves to be increased to $1.5 million per the Administration request. The program supported a trade show in Miami to build our market sector in the Caribbean Basin and is now supporting industry efforts to sell technology in Indonesia, The Phillipines, North Africa and West Asia. The program leverages government support to insure that the U.S. renewable energy industry can effectively compete against our international competitors who are able to obtain concessionary financing and tied-aid from their governments. New projects to unify industry access to federal export assistance programs and maintain a low-orbit satellite network for maintainance deserves support. The industry also requests assistance to provide a formal U.S. industry presence in the Caribbean Basin and the Pacific Rim via the U.S. Export Council for Renewable Energy (US/ECRE), a coalition of nine U.S. industry renewable energy trade associations.

A NEW LABORATORY FACILITY FOR SERI

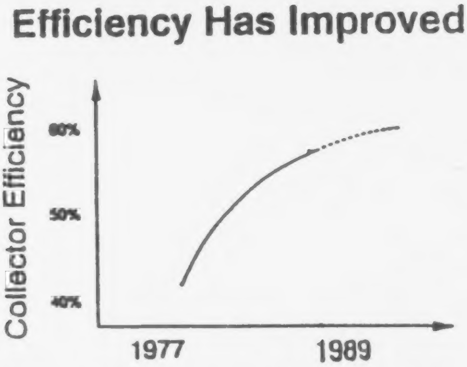
The industry supports efforts to upgrade SERI's facilities as long as it does not impinge on the core research efforts for solar and renewable energy. If the facility is treated as an add-on to meet cost-savings and environmental/health safeguards, it is a good idea. However, the industry recommends that the Subcommittee request US/DOE to report on the extant energy conservation and solar energy are used in the new facility. Quite bluntly, SERI should use the very solar technologies they have helped commercialize and which are used routinely by the Department of Defense and other federal agencies as a standard way to save energy (and taxpayers' money).

1995

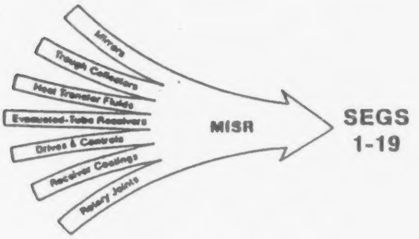
A. PHOTOVOLTAICS: EFFICIENCY, RELIABILITY & COST REDUCTIONS



B. SOLAR BUILDINGS: IMPROVED COLLECTOR EFFICIENCY



C. SOLAR THERMAL POWER: LOWERING CAPITAL COST TRENDS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SEGS
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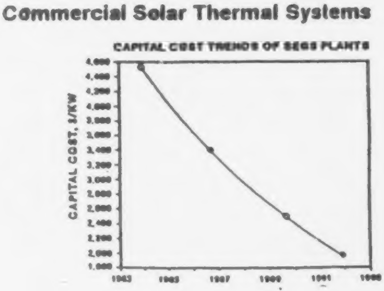

TUESDAY, APRIL 3, 1990.

BIOFUELS R&D

WITNESS

DR. DONALD L. KLASS, PRESIDENT, BIOMASS ENERGY RESEARCH ASSOCIATION

Mr. BEVILL. Next we have Dr. Don Klass.

Pleased to have you with us. You may proceed as you wish.

Dr. KLASS. Thank you, Mr. Chairman and Members of the subcommittee. I appreciate the opportunity again to testify on behalf of the Biomass Energy Research Association.

Before I present our position and recommendations on the fiscal 1991 budget, I would briefly like to point out that biofuels can provide strong contributions to the recently announced energy strategy. They can help clean up the environment, make major contributions to energy security and to economic growth.

The first two pages of my statement which I would appreciate becoming part the record, present more detail on these subjects, so I urge you to read this document when you have the opportunity.

We have reviewed DOE's proposed fiscal 1991 $28.0 million research budget, and are pleased to note that a significant increase in their request to Congress has occurred compared to the fiscal 1990 request. The DOE request for fiscal 1991 includes, for the first time, a specific line item for the regional programs established by Congress in 1983. It also includes a line item for hydrogen research that has little or no relationship to biofuels.

These programs have been directed to be funded by Congress without a corresponding increase in the budget in past years, and inclusion as line items will enable the core biofuels program to be maintained without major program reductions and terminations.

BERA strongly recommends that a majority of the research funds appropriated for fiscal 1991 be contracted to organizations other than national laboratories. This recommendation is in line with the DOE Energy Research Advisory Board's analysis of DOE's solar energy research program in 1985. This will allow independent U.S. scientists and engineers involved in biofuels research to maintain their skills and improve their expertise, and for the Nation to maintain a competitive technological position in the development of alternative fuels.

The following represents BERA's recommendations on the research areas and the funding levels we urge you to include in the fiscal 1991 program. We recommend that demonstration projects be added to the research program so that industry cost-shared scale-up work can be initiated as early as possible to ensure industry participation and transfer of the research results to the private sector.

I would like to point out that the industry co-funded medium-Btu gasification demonstration plant that BERA has supported for several years is not yet under contract. $5 million have already been separately appropriated for the scale-up program and will therefore not affect the budget for fiscal 1991. BERA strongly urges that this project be initiated as soon as possible.

I would now like to summarize BERA's biofuels recommendations for fiscal 1991.

Land and/or water-based biomass grown and harvested specifically for biofuels represents a long-term approach to energy plantations that can supply large amounts of fossil fuel substitutes. Considerable progress has been made on efficient short-rotation intensive-culture tree production methods, and on the growth of herbaceous species. Considerable progress has also been made on development of "wood grass," in which carefully chosen tree species are grown in close-spaced plantings and harvested like a perennial grass over short rotations.

In addition, research on tissue culture techniques and the application of genetic engineering methods to low-cost energy crop production have shown promise. This work should be continued as an integral part of the biofuels program. It is recommended that research on aquatic biomass be minimized and that emphasis be given to terrestrial biomass species of trees and grasses.

BERA recommends that $5,700,000 be directed to continue biomass production research.

Thermochemical conversion research to produce energy and clean solid, liquid, and gaseous biofuels at competitive costs is the prime target of this program component. Laboratory- and pilot-scale research on municipal solid wastes and biomass has established the technical feasibility of several advanced combustion, gasification, and liquefaction processes, and basic research has improved our understanding of the mechanisms of conversion and the formation of pollutants, especially from municipal solid waste-energy recovery facilities.

Future research should emphasize end uses such as alternative transportation fuels, efficient solid waste disposal-energy recovery processes, and fuels for clean-burning wood stoves, fireplaces, and furnaces.

BERA's members feel that thermochemical conversion research on biomass and municipal solid waste should be funded equally. Municipal solid waste disposal is a nationwide problem that needs our immediate attention, while biomass offers a long-term approach to development of large-scale supplies of biofuels.

BERA recommends that $8,900,000 be directed to continue thermochemical conversion research on biomass and municipal solid wastes.

Biochemical conversion. Application of the rapidly advancing field of biotechnology to the conversion of low-cost biomass to liquid and gaseous fuels such as ethanol and methane-containing fuel gases has made great progress and should be continued. BERA recommends that $7,600,000 be directed to continue biochemical conversion research for liquid and gaseous biofuels production.

The regional programs established by Congress in 1983 are implemented through five separate regions and should be sustained to help transfer research results to end users. BERA urges that funding be provided for the regional programs at $5 million.

One of the difficulties encountered in commercializing biofuels technology is that industry has not utilized much of the research information developed in this program. It is therefore strongly recommended that specific scale-up projects be initiated with industry involvement and cost sharing. The BERA board of directors recommends that the first of these demonstration projects be selected.

It is recommended that at least one scale-up demonstration project be started in fiscal 1991, in addition to the medium-Btu gasification demonstration that should be underway in fiscal 1990, and that at least one new demonstration project be funded each year thereafter. A first-year budget of $11 million is recommended for this work.

Recommended budget. Over the last few years, a continually reduced appropriation has made it extremely difficult for DOE to sustain a balanced research program. A high proportion of a limited budget allocated to earmarked projects and expansion of the biofuels program to include non-biofuels research without corresponding budgetary additions caused major program reductions.

BERA strongly urges Congress, therefore, to appropriate a budget of $38.2 million as allocated above for fiscal 1991, and an additional $0.8 million for capital equipment.

Thank you very much.

Mr. Bevill. Thank you very much.

[The statement of Dr. Klass follows:]

Statement of Dr. Donald L. Klass, President
Biomass Energy Research Association

Before the House Committee on Appropriations
Subcommittee on Energy and Water Development

Hearing on Department of Energy FY91 Budget Appropriation
April 3, 1990

This testimony pertains to the Department of Energy research appropriation. The Biomass Energy Research Association (BERA) recommends that $39.0 million be provided for biofuels research in fiscal 1991, with the funds allocated in the following fashion:

Biomass Production	$ 5,700,000
Thermochemical Conversion	
Biomass	4,450,000
Municipal Solid Waste	4,450,000
Biochemical Conversion	7,600,000
Regional Programs	5,000,000
Demonstration Programs	11,000,000
Capital Equipment	800,000
	$39,000,000

I am Donald Klass, President of BERA. BERA is a non-profit association that was founded in 1982 by biofuels researchers and companies that are conducting biofuels research. Our objectives are to promote education and research on renewable biomass- and waste-to-energy systems that can be economically utilized by the public, and to serve as a source of information on policies and programs for our members and industry.

We appreciate the opportunity again to present BERA's recommendations for the federal biomass and municipal waste research budget, and would like to commend the Subcommittee for its appreciation of the role of biofuels in our national energy policy. Before presenting BERA's position and recommendations on the fiscal 1991 budget, I would briefly like to point out how biofuels can provide a strong contribution to the recently announced National Energy Strategy.

Biofuels Can Help Clean-Up Environment

Because of recent activity on new federal clean-air legislation, it is important to emphasize the role that biofuels can play in achieving a cleaner environment. Usage of biofuels, such as methanol, ethanol, and other oxygenated biomass derivatives, can have a strong beneficial impact on air quality, particularly as alternative liquid transportation fuels.

- The extremely low sulfur content of biomass results in little or no SO_x emissions, the precursor of acid rain.
- Oxygenated biofuels emit very little NO_x, a necessary reactant in the formation of ozone (smog).
- Application of biofuels technologies to waste offers opportunities for combined waste disposal-energy recovery-conservation systems.

As I pointed out last year, there is little doubt that the growth of biomass is the only practical way to remove CO_2 from the air and ameliorate global warming, and that biofuels are the only energy technologies that can both remove atmospheric CO_2 and reduce the amount of fossil fuels burned. In addition, displacement of fossil fuels by biofuels can eliminate or reduce atmospheric SO_x, NO_x, ozone, and unburned hydrocarbon fuels, all of which contribute heavily to sub-quality air.

Relationship to Energy Security

- The widely dispersed nature of biomass for biofuels greatly improves our national security by providing a secure energy supply.
- Biofuels are the only renewable energy supply from local resources capable of supplying substitutes for fossil-derived liquid, gaseous, and solid fuels, as well as heat and electricity, to all areas of the Nation and to all four sectors of the energy economy -- residential, commercial, industrial, and transportation.
- In 1988, biofuels contributed about 3.2 quad (1.5 million barrels of oil equivalent per day) of energy in all forms, or about 3.8% of our national total primary energy demand of about 83 quad, and have been projected to contribute 10.1 quad in 2010.
- The energy potentially available each year from biomass and wastes about the turn of this century has been estimated to range up to 54.9 quad, or about one half of U.S. projected energy consumption at that time.
- Municipal, industrial, and agricultural wastes are currently estimated to have an energy potential of about 15.0 quad per year, and wood and wood wastes are currently estimated to have an energy potential up to about 25.0 quad per year.
- Utilization of excess capacity croplands of up to 160 million acres projected beyond the year 2000 could produce up to 10.2 quad per year of energy crops. This could open the way to new food, feed, and fuel product flexibility to provide more stability to market prices, create new markets for the agricultural sector, and reduce federal farm subsidy payments.
- Virtually all basic organic chemicals -- including plastics and petroleum-derived products -- can be manufactured from biomass and wastes thereby displacing and conserving depletable fossil feedstocks.

Relationship to Economic Growth

- Biofuels are the only renewable energy resource that can provide desperately needed local jobs and economic development nationwide for the American farmer.
- At a price of $20 per barrel of oil equivalent, biofuels currently retain in the U.S.A. about $11.0 billion per year that are not expended on oil imports thereby having a strong beneficial impact on our massive trade deficit.
- Biofuels provide excellent regional benefits -- 80 cents of every dollar spent on biofuels in a given region stays in that region, while 80 cents of every dollar spent on petroleum leaves the region.

- Industrial utilization of biofuels supplies local jobs and income such as the 57,000 jobs and $878 million in income in the Southeast that resulted from fuel wood usage in 1988, both of which are projected to double by the year 2000.

BERA RECOMMENDS $39.0 MILLION FOR FISCAL 1991 BIOFUELS RD&D

A Balanced Program of Production, Conversion, and Technology Transfer

We have reviewed DOE's proposed fiscal 1991 $28.0-million research budget, and are pleased to note that a significant increase in their request to Congress has occurred compared to the fiscal 1990 request. The DOE request for fiscal 1991 includes, for the first time, a specific line item for the Regional Programs established by Congress in 1983. It also includes a line item for hydrogen research that has little or no relationship to biofuels. These programs have been directed to be funded by Congress without a corresponding increase in the budget in past years, and inclusion as line items will enable the core biofuels program to be maintained without major program reductions and terminations.

BERA strongly recommends that a majority of the research funds appropriated for fiscal 1991 be contracted to organizations other than national laboratories. This recommendation is in line with the DOE Energy Research Advisory Board's analysis of DOE's solar energy research program in 1985. This will allow independent U.S. scientists and engineers involved in biofuels research to maintain their skills and improve their expertise, and for the Nation to maintain a competitive technological position in the development of alternative fuels.

The following represents BERA's recommendations on the research areas and the funding levels we urge you to include in the fiscal 1991 program. We recommend that demonstration projects be added to the research program so that industry cost-shared scale-up work can be initiated as early as possible to ensure industry participation and transfer of the research results to the private sector. I would like to point out that the industry co-funded medium-Btu gasification demonstration plant that BERA has supported for several years is not yet under contract. Five million dollars have already been separately appropriated for the scale-up program and will therefore not affect the budget for fiscal 1991. BERA strongly urges that this project be initiated as soon as possible.

About one half of our budgetary recommendation, excluding BERA's scale-up recommendations of $11 million, is again allocated to conversion because we believe that it is the foundation of a balanced program to develop advanced innovative systems for the production of clean solid, liquid, and gaseous biofuels. We continue to believe the real potential of biofuels can never be realized without development of efficient, economic, conversion processes.

Our recommendations comprise a balanced program of production and conversion research and technology transfer to the private sector with emphasis on end uses such as alternative liquid transportation fuels and on innovative municipal solid waste disposal-energy recovery systems having superior environmental benefits and minimal emissions.

I would now like to summarize BERA's biofuels recommendations for fiscal 1991.

Biomass Production

Land and/or water-based biomass grown and harvested specifically for biofuels represents a long-term approach to energy plantations that can supply large amounts of fossil fuel substitutes. Considerable progress has been made on efficient short-rotation intensive-culture tree production methods, and on the growth of herbaceous species. Considerable progress has also been made on development of "wood grass," in which carefully chosen tree species are grown in close-spaced plantings and harvested like a perennial grass over short rotations. In addition, research on tissue culture techniques and the application of genetic engineering methods to low-cost energy crop production have shown promise. This work should be continued as an integral part of the biofuels program. It is recommended that research on aquatic biomass be minimized and that emphasis be given to terrestrial biomass species of trees and grasses.

BERA recommends that $5,700,000 be directed to continue biomass production research.

Thermochemical Conversion

Thermochemical conversion research to produce energy and clean solid, liquid, and gaseous biofuels at competitive costs is the prime target of this program component. Laboratory- and pilot-scale research on municipal solid wastes and biomass has established the technical feasibility of several advanced combustion, gasification, and liquefaction processes, and basic research has improved our understanding of the mechanisms of conversion and the formation of pollutants, especially from municipal solid waste-energy recovery facilities. Future research should emphasize end uses such as alternative transportation fuels, efficient solid waste disposal-energy recovery processes, and fuels for clean-burning wood stoves, fireplaces, and furnaces.

In combustion research, a need still exists for improved solid waste incinerators that meet environmental requirements and cost goals. Research should be focused on systems that can be used for economic disposal of municipal solid wastes in small communities. Research is also needed to reduce the emissions of solid waste disposal processes and to characterize the specific pollutants produced under specific operating conditions.

Continued research on the thermochemical gasification of wastes and biomass has resulted in the development of advanced process designs and reactor configurations that maximize yields and provide optimum product distributions. For example, selected operating conditions can produce medium-Btu gas or optimum synthesis gases for manufacture of ammonia, methanol, methane, gasoline, or diesel fuels. This work has been performed at the laboratory and pilot scales and is ready for demonstration. Some research is still needed to perfect the feeding of diverse biomass and waste feedstocks at elevated pressures, the elimination of tars and particulates from product gas streams, the recycling of residuals, and the effects of oxygen-starved conversion on toxic metal emissions.

Direct conversion of municipal solid wastes, wood, and herbaceous feedstocks via pyrolysis to liquid fuels and their upgrading by advanced catalytic processes to transportation fuels show promise. Continued research is expected to increase the overall liquid yields to the point where the gasoline costs are competitive with those of petroleum-based liquids. Thermochemical liquefaction of wastes and low-grade biomass for the production of low-cost fuel ethanol or mixed alcohols also shows promise and merits investigation.

BERA's members feel that thermochemical conversion research on biomass and municipal solid waste should be funded equally. Municipal solid waste disposal is a nationwide problem that needs our immediate attention, while biomass offers a long-term approach to development of large-scale supplies of biofuels.

BERA recommends that $8,900,000 be directed to continue thermochemical conversion research on biomass and municipal solid wastes.

Biochemical Conversion

Application of the rapidly advancing field of biotechnology to the conversion of low-cost biomass to liquid and gaseous fuels such as ethanol and methane-containing fuel gases has made great progress and should be continued. Process evaluations by experts have identified key opportunities for economic pay-backs with biochemical conversion systems, and new genetic engineering and other emerging biological approaches have made significant advances. Research needs have also been identified that should be addressed to increase our understanding of the biochemical and microbial interactions that occur in fermentation processes.

At this time, the cost of ethanol from lignocellulosic biomass is approaching that from corn, and with continued research, we are confident the cost can be made competitive with fuels at today's prices without tax exemptions, thereby lessening our dependence on foreign supplies of petroleum while stabilizing fuel prices. Furthermore, the technical advances made through this program will benefit the competitive position of the United States in biotechnology world markets. Future research should be concentrated on conversion of low-cost feedstocks such as lignocellulosic wood wastes by high-yield acid- and enzyme-catalyzed hydrolysis processes, on development of innovative fermentation product separation schemes that have the capability of producing low-cost fuels and by-products, on the development of organisms that can metabolize the hemicellulose components in the feedstocks, and on the utilization of the lignin fractions as octane enhancers and chemicals.

Research on the use of genetically engineered bacteria that can produce ethanol from low-cost feedstocks at higher rates and yields should be incorporated in the program. In addition, research should be performed on the development of innovative processes for the production of butyl alcohols so that methyl-t-butyl ether (MTBE) and ethyl-t-butyl ether (ETBE) gasoline additives can be manufactured totally from biomass without use of petroleum.

Biochemical conversion systems are unique in that they can directly produce methane, the major component of natural gas, from the full range of low-cost biomass. Research is needed to develop novel systems that permit higher feedstock concentrations and smaller reactor volumes, and therefore lower capital costs. This research is expected to lead to practical methods for economic production of methane from low-cost biomass. And in the case of feedstocks such as municipal wastewaters, low-cost integrated biomass production-waste stabilization-methane production systems are expected to evolve from continued research.

BERA recommends that $7,600,000 be directed to continue biochemical conversion research for liquid and gaseous biofuels production.

Regional Programs

The Regional Programs established by Congress in 1983 are implemented through five separate regions and should be sustained to help transfer research results to end users. The five regions -- Northwest, West, Great Lakes, Northeast, and Southeast -- have similar objectives, chief among them being the utilization of biofuels technologies by the private sector using local resources.

BERA urges that funding be provided for the Regional Programs at $5,000,000.

Demonstration Programs

One of the difficulties encountered in commercializing biofuels technology is that industry has not utilized much of the research information developed in this program. It is therefore strongly recommended that specific scale-up projects be initiated with industry involvement and cost sharing. The BERA Board of Directors recommends that the first of these demonstration projects be selected from these subjects: Methanol Production from Medium-Btu Biomass Gasification Technology, Ethanol Production from Best Available Lignocellulose-Based Technology, Electric Power Production from High-Efficiency Biomass-Fueled Gas Turbines, Municipal Solid Waste Disposal-Energy Recovery by Best Available Technology, Pyrolytic Liquid Fuel Production by Best Available Technology, Biomass Gasification-Molten Carbonate Fuel Cell Cogeneration Systems, and Large-Scale, Short-Rotation, Intensive-Culture Tree or Wood Grass Field Demonstrations. It is recommended that at least one scale-up demonstration project be started in fiscal 1991, in addition to the medium-Btu gasification demonstration that should be underway in fiscal 1990, and that at least one new demonstration project be funded each year thereafter.

A first-year budget of $11,000,000 is recommended for this work.

Recommended Budget

Over the last few years, a continually reduced appropriation has made it extremely difficult for DOE to sustain a balanced research program. A high proportion of a limited budget allocated to earmarked projects and expansion of the biofuels program to include non-biofuels research without corresponding budgetary additions caused major program reductions. BERA strongly urges Congress, therefore, to appropriate a budget of $38.2 million as allocated above for fiscal 1991, and an additional $0.8 million for capital equipment.

Program Planning

DOE's first multiyear plan for biofuels R&D was published in fiscal 1989. BERA recommends that the plan be updated in fiscal 1991 and that program elements described in the plan should be related to past, present, and planned funding levels.

TUESDAY, APRIL 3, 1990.

FEDERAL ENERGY REGULATORY COMMISSION

WITNESS

JOHN D. ECHEVERRIA, GENERAL COUNSEL, AMERICAN RIVERS, INC.

Mr. BEVILL. Next we have Mr. John Echeverria. Pleased to have you with us. You may proceed as you wish. Your full statement will be made a part of the record.

Mr. ECHEVERRIA. Thank you, Mr. Chairman.

As you indicated, my name is John Echeverria. I am the General Counsel and Hydropower Policy Director for American Rivers, Inc. This is my first opportunity to testify before this subcommittee, and I appreciate the invitation.

American Rivers believes that hydroelectricity is a useful use of America's rivers. We are not generally opposed to development per se. At the same time we work to oppose the construction of ill-advised hydroelectric projects on the free-flowing rivers of this country.

We are also participating in many of the 200 ongoing relicensing proceedings across the country to help America's working rivers be improved for fishing, boating and other public uses.

We strongly support the Commission's request for environmental review of hydropower proposals. We believe a minimum of $1 million in addition should be added to the administration's budget proposal for expanding environmental review activities in fiscal year 1991.

In the last few years, FERC has taken important strides to comply with the National Environmental Policy Act. In late 1987 the Commission finally adopted regulations implementing NEPA. The Commission agreed to comply, like all other Federal agencies, with the President's Council on Environmental Quality guidelines. Unfortunately, the financial resources that have been available to the Commission to carry out its duties under NEPA have not kept pace with the environmental responsibilities.

Today the Commission's environmental review process is deficient in several important respects. The Commission continues to prepare far fewer EIS's than are warranted by the issues raised. The Commission has approved many, many hundreds of projects over the past five years, but from fiscal year 1985 through 1989 the Commission completed a total of ten EIS's. In 1989, although the staff was working on a number of EIS's, not a final one was issued.

In short, preparation of an EIS on a hydro proposal remains the rare exception, not the rule.

In addition, in the vast majority of licensing decisions, the Commission fails to hold any local hearings or even to visit the site proposed for development. This practice leads to poor decisions, violates NEPA's mandate to include the public in the environment review process, and reinforces local public resentment over the fact that anonymous Federal bureaucrats appear to be deciding the future of the river without consulting the members of the community.

Finally, in part because of inadequate financial resources, the Commission has so far done a poor job of preparing for the environmental analysis of the upcoming wave of relicensings, over 200 in the next five years.

The Commission has delegated virtually all of the responsibility for preparing relicensing applications to applicants and Federal and state resource agencies which are subject to their own financial constraints. As a result, the Commission staff has little understanding of the resource issues raised by specific relicensings and is not aware of the gaps in applicants' ongoing studies and their assessments of alternatives.

If the Commission had additional resources it could make the relicensing process more efficient. Staff could visit and become more familiar with the hydroelectric projects scheduled. In addition, the Commission staff could help identify resource issues during the consultation process and assist applicants in completing all the necessary studies prior to the filing of their applications.

American Rivers supports the Commission's request for additional funding for environmental reviews. We believe the request does not go far enough. In March 1989 the Commission presented a tentative schedule of planned EIS's to the House Subcommittee on Energy and Power. In our view that list omits a number of major scheduled licensing and relicensing proceedings that are likely to require EIS's. In order to prepare an adequate number of EIS's and to prepare for relicensing adequately, American Rivers estimates the Commission's budget for environmental review should be increased over the administration proposal by $1 million.

If I may, I would like to comment briefly on two other issues. First, American Rivers urges the subcommittee to direct the Commission to fully involve the public at large in the relicensing outreach program. Over the last two years American Rivers has worked in cooperation with FERC to help ensure that its relicensing program includes anglers, boaters and other citizens and private groups.

We were disappointed to read that the public had been entirely excluded from the outreach program as described in the Commission's statement of goals and objectives in its budget justification document. In our view, the equal consideration mandate requires the Commission to ensure that all aspects of the public interest are represented.

Mr. BEVILL. Your time is up. But we are interested in what you have to say. Could you wrap it up in about 30 seconds?

Mr. ECHEVERRIA. My second point is that the legislation has been introduced in the House and has been passed by the Senate that would restrict severely Commission jurisdiction over these unlicensed projects. Across the country there are approximately 350 such projects. American Rivers and other groups are vigorously opposed to the legislation as drafted.

My immediate concern is that the Commission staff and apparently in response to concerns so far expressed only on the Senate side, is failing to pursue its program to bring such projects under license. We want to direct that to the subcommittee's attention and urge you to the extent possible to direct the Commission to continue to pursue its programs to bring unlicensed projects under license.

Mr. BEVILL. Thank you.

[The statement of Mr. Echeverria follows:]

American Rivers

TESTIMONY OF JOHN D. ECHEVERRIA

GENERAL COUNSEL

AMERICAN RIVERS, INC.

BEFORE THE

HOUSE COMMITTEE ON APPROPRIATIONS

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

APRIL 3, 1990

801 PENNSYLVANIA AVE., S.E.
SUITE 303
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202-547-6900

Good morning. My name is John D. Echeverria. I am the General Counsel and Director of Hydropower Policy for American Rivers Inc., the nation's principal river conservation organization. American Rivers works to oppose the construction of ill-advised hydroelectric projects on outstanding free-flowing rivers. We also are participating in numerous relicensing proceedings across the country to help enhance America's working rivers for fishing, boating, and other public uses.

FUNDING FOR FERC ENVIRONMENTAL REVIEW OF HYDROELECTRIC PROJECTS

Request of $16,282,000 for FY 1991 (increase of $1 million over administration request for Hydropower Licensing - Operating Expenses).

American Rivers strongly supports the Commission's request for increased funding for environmental review of hydropower proposals. However, we believe a minimum of $1,000,000 needs to be added to the administration's budget proposal for expanding environmental review activities in FY 1991.

In the last few years, the FERC has taken important steps to comply with the letter and spirit of the National Environmental Policy Act. In late 1987, the Commission finally adopted internal regulations implementing NEPA. In addition, the Commission agreed to comply, like all other federal agencies, with the NEPA guidelines of the President's Council on Environmental Quality. Unfortunately, the financial resources available to the Commission to carry out its duties under NEPA have not kept pace with the Commission's growing recognition of its environmental responsibilities.

Today, the Commission's environmental review process is deficient in several important respects. The Commission continues to prepare far fewer EIS's than are warranted by the significant resource issues raised by hydroelectric proposals. The Commission has approved many, many hundreds of hydroelectric projects over the last five years, but from FY 1985 through FY 1989 the Commission completed a grand total of ten Environmental Impact Statements (EIS's). In FY 1989, although the staff made progress in preparing a number of EIS's, we understand that the Commission did not issue a single final EIS on a hydroelectric project. In short, preparation of an EIS on a hydro proposal remains the rare exception, not the rule.

In addition, in the vast majority of licensing decisions, the Commission fails to hold any local hearings or even to visit the site proposed for development. The Commission staff commonly declines, for budgetary reasons, requests by the public that Commission staff visit a site. This practice leads to poor decisions, violates NEPA's mandate to include the public in the environmental review process, and reinforces local public resentment over the fact that anonymous federal bureaucrats appear to be deciding the future of a community's river without consulting the members of the community.

Finally, in part because of inadequate financial resources, the Commission so far has done a poor job of preparing for environmental analysis of the upcoming wave of relicensings. The Commission has delegated virtually all of the responsibility for preparing relicensing applications to applicants and federal and state resource agencies. As a result, the Commission staff has little understanding of the resource issues raised by specific relicensings, and is unaware of the gaps in applicants' ongoing studies and their assessments of alternatives. When several hundred applications begin to flow into the Commission at the end of 1991, licensing decisions on these projects will undoubtedly be delayed as the Commission staff familiarizes itself with the projects and considers whether to initiate a whole new round of environmental studies to fill out the gaps and examine reasonable alternatives.

If the Commission had additional resources, it could make the relicensing process more efficient. Additional staff could visit and become more familiar with the hydroelectric projects scheduled for relicensing. In addition, Commission staff could help identify resource issues during the consultation process, and assist applicants in completing all the necessary studies prior to the filing of their applications.

American Rivers supports the Commission's request for additional funding for environmental reviews, but we believe that the request does not go far enough. In March 1989, the Commission presented a tentative schedule of planned EIS's through 1992 to the House Subcommittee on Energy and Power. In our view, that list omits a number of major scheduled licensing and relicensing proceedings that are very likely to require EIS's. In order to prepare an adequate number of EIS's, as well as to conduct more site visits and prepare for relicensing, American Rivers estimates that the Commission's budget for environmental review (included under Hydropower Licensing - Operating Expenses) should be increased by an additional $1,000,000.

OTHER ISSUES

American Rivers urges the Subcommittee to direct the Commission to fully involve the public at large in its relicensing outreach program. Over the last two years, American Rivers has worked in cooperation with FERC to help ensure that its relicensing outreach program includes anglers, boaters, and other citizens and private groups. We were therefore disappointed to read that the public had been entirely excluded from the outreach program as described in the Commission's statement of goals and objectives in its budget justification document. In our view, the "equal consideration" mandate requires the Commission to ensure that all aspects of the public interest are represented. When the Commission is deciding whether and how an existing project should be relicensed, the members of the local Trout Unlimited Chapter who fish the river are entitled to the same consideration as a firm seeking to use the river to generate electricity.

American Rivers also urges the Subcommittee to direct the Commission to continue to place major emphasis on its program to bring existing, unlicensed hydro plants subject to the Commission jurisdiction under license. According to testimony presented last May to the Senate Subcommittee on Water and Power, there are approximately 350 unlicensed operating hydro plants across the country. These projects are generally subject to minimal or no state oversight. In most instances, serious consideration has never been given to balancing these projects' power operations with environmental concerns in the fashion mandated by the Electric Consumers Protection Act of 1986. Thus, bringing many of these projects under Commission jurisdiction is critical to ensuring that the projects are operated in the overall public interest.

Legislation has been introduced in the House of Representatives (H.R. 1069) and has passed the Senate (S. 635) that would severely restrict Commission jurisdiction over these unlicensed projects. American Rivers and other national and local conservation groups vigorously oppose this legislation as drafted. In response to the Senate's action on S. 635, we understand that the Commission's Division of Project Compliance and Administration has backed off pursuing several projects that appear to be subject to Commission jurisdiction. Pending legislative action, American Rivers believes the Commission should continue to enforce its existing jurisdiction, and we urge the Subcommittee to specifically direct the Commission to continue to pursue its program dealing with unlicensed constructed projects.

Thank you very much for the opportunity to testify today.

TUESDAY, APRIL 3, 1990.

WESTERN AREA POWER ADMINISTRATION

WITNESS

THOMAS P. GRAVES, EXECUTIVE DIRECTOR, MID-WEST ELECTRIC CONSUMERS ASSOCIATION

Mr. BEVILL. Mr. Thomas Graves.

Mr. GRAVES. Thank you, Mr. Chairman. I am Thomas Graves, representing the Mid-West Electric Consumers Association. On behalf of the over 300 Federal power customers of the Pick-Sloan Missouri River Basin Program and the three million consumers we serve, we appreciate the opportunity to appear before this subcommittee.

We strongly object to the staff reductions called for in the budget for the Western Area Power Administration.

The Pick-Sloan region which Mid-West represents—the Missouri River Basin of the Upper Great Plains—is but one of the river basins in which Western has the responsibility for marketing power from Federal multi-purpose projects. In all, the Western Area Power Administration serves fifteen states. The Pick-Sloan region is served by rural electric cooperatives, municipal electric utilities, public power districts, and investor-owned utilities.

The agreement struck between this region, its not-for-profit sector of the electric utility industry and the Federal Government called for the government to market the power, at cost, and the consumer-owned systems—owned by the people of the region—would repay the investment costs plus interest associated with the power investment and in addition would pay costs of associated development in the comprehensive regional development plan.

The Western Area Power Association, which is responsible for the marketing of this power and the construction, operation and maintenance of associated transmission facilities is a critical agency to the success of this program, along with the U.S. Army Corps of Engineers and United States Bureau of Reclamation which actually operate the multi-purpose projects.

Since we as power consumers have agreed to repay the costs of the construction and operation of the Pick-Sloan system, we have a vital stake in the operations and costs of Western. In fact, all of the costs of Western's operations are paid for by Western's power customer throughout the West.

It is a responsibility we have not taken lightly. We scrutinize Western's power repayment studies to satisfy ourselves that the investments are necessary, and that costs are reasonable, appropriate, and assigned to the proper category.

We have been concerned about increases in the costs of the Pick-Sloan Missouri River Basin Program. Western has announced a proposed rate increase of 1.69 mills commencing in October 1990. We are worried about continued rate increases over the next several years, due to increases in operations and maintenance costs as well as system replacements. As everyone knows, it is expensive to rebuild a 1950's investment at 1990's costs and interest rates.

So one might ask why do we come before this subcommittee to protest the OMB-mandated staffing reductions in Western's operations? Bluntly put, sir, because we expect it is going to cost us money.

Administrator Clagett has already testified before this subcommittee that, "The work has to be done." The reduction in full time equivalents will mean that Western will have to hire contractors to complete its mission. That will translate into an increase in costs which will have to be repaid through power rates. Our experience suggests that use of contractors could cost as much as two times the cost of the Federal personnel fulfilling those functions.

We have not seen any justification for the proposed reductions. The Western Area Power Administration and the other Federal power marketing administrations are unique agencies in the Federal Government. They are responsible for the marketing and dispatch of power generated at Federal multi-purpose projects.

Additionally, they are responsible for the construction, operation and maintenance of several thousand miles of transmission. For example, the Western Area Power Administration is responsible for over 11,000 miles of transmission in the Pick-Sloan Missouri Basin region alone.

The Western system and marketing operations are crucial not just to the REC's and municipal electric systems, but to the entire region and its electric utility grids.

The reduction in full time equivalents will cost Pick-Sloan customers not just money but also expertise. Contractors can do excellent work, but when their work is done, they are gone—sort of an instant institutional amnesia.

Forcing Western to fulfill its mission through use of outside contractor help diminishes the expertise Western can retain in-house. This is particularly true for technical staff who deal with engineering and environmental matters. It will also mean that remaining staff will have to spend more time overseeing contracts, in addition to the responsibilities they already have.

Congress has charged Western with certain responsibilities in fulfilling its mission. Environmental issues are coming to the forefront. The environmental issues which Western must deal with today are complex and knotty problems.

Similarly, Western must maintain its role in the planning, construction, operation, and maintenance of the transmission system which delivers the power to our members. Much of the Pick-Sloan transmission system is old and needs replacement or upgrading.

The people who work at Western are a fine group of dedicated employees, but as you as Members of Congress know better than any of us, there are only so many hours in a day, and a person can only do so much.

Mr. BEVILL. Your time is up, but we do want to hear what you have to say. Can you wrap it up in 30 seconds?

Mr. GRAVES. We are not opposing the use of contractors when it is cost-effective, but we do when it threatens to erode the capabilities of Western. We ask that Congress restore the staffing level for Western and if Congress feels that more might be able to be done, ask WAPA for its assessment of the issue.

Our guess is that more Federal employees might actually cost us less. That could be a win-win situation and it is certainly worth looking into.

Mr. BEVILL. Thank you very much. We will certainly look into it.

[The statement of Mr. Graves follows:]

Mid - West Electric Consumers Association

Dan Holdhusen
President

Virgil Fodness
Vice President

Paul Neil
Secretary - Treasurer

Thomas P. Graves
Executive Director

Statement of the
MID-WEST ELECTRIC CONSUMERS ASSOCIATION
Before the
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
HOUSE COMMITTEE ON APPROPRIATIONS

FY 1991 Energy and Water Development Appropriation Bill

Thank you, Mr. Chairman. I am Thomas Graves, representing the Mid-West Electric Consumers Association. On behalf of the over three hundred federal power customers of the Pick-Sloan Missouri River Basin Program and the three million consumers we serve, we appreciate the opportunity to appear before this subcommittee

The Mid-West Electric Consumers Association strongly objects to the staff reductions called for in the budget for the Western Area Power Administration.

The Pick-Sloan region which Mid-West represents -- the Missouri River Basin of the Upper Great Plains -- is nine states: Montana, where the headwaters of the Missouri River lie, North Dakota, South Dakota, Wyoming, Colorado, Iowa, Nebraska, Minnesota and Kansas. It is but one of the river basins in which Western has the responsibility for marketing power from federal multi-purpose projects. In all, the Western Area Power Administration serves fifteen states.

The Pick-Sloan region is served by rural electric Cooperatives, municipal electric utilities, public power districts, and investor-owned utilities.

The agreement struck between this region, its not-for-profit sector of the electric utility industry and the federal government called for the government to market the power, at cost, and the consumer-owned systems -- owned by the people of the region -- would repay the investment costs plus interest associated with the power investment and in addition would pay costs of associated development in the comprehensive regional development plan.

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The Western Area Power Administration, which is responsible for the marketing of this power and the construction, operation and maintenance of associated transmission facilities is a critical agency to the success of this program, along with the U.S. Army Corps of Engineers and United States Bureau of Reclamation which actually operate the multi-purpose projects.

Since we as power consumers have agreed to repay the costs of the construction and operation of the Pick-Sloan system, we have a vital stake in the operations and costs of Western. In fact, all of the costs of Western's operations are paid for by Western's power customers throughout the West.

It is a responsibility we have not taken lightly. We scrutinize Western's Power Repayment Studies to satisfy ourselves that the investments are necessary, and that costs are reasonable, appropriate, and assigned to the proper category.

We have been concerned about the increase in the costs of the Pick-Sloan Missouri River Basin Program. Western has announced a proposed rate increase of 1.69 mills commencing in October, 1990. We are worried about continued rate increases over the next several years, due to increases in operations and maintenance costs as well as system replacements. As everyone knows, it's expensive to rebuild a 1950's investment at 1990's costs and interest rates.

So one might ask why do we come before this subcommittee to protest the OMB-mandated staffing reductions in Western's operations? Bluntly put, because we expect it's going to cost us money.

Administrator Clagett has already testified before this subcommittee that "the work has to be done." The reduction in Full Time Equivalents will mean that Western will have to hire contractors to complete its mission. That will translate into an increase in costs which will have to be repaid through power rates. Our experience suggests that use of contractors could cost as much as two times the cost of federal personnel fulfilling those functions.

We have not seen any justification for the proposed reductions. The Western Area Power Administration and the other federal power marketing administrations are unique agencies in the federal government. They are responsible for the marketing and dispatch of power generated at federal multi-purpose projects.

Additionally, they are responsible for construction, operation and maintenance of several thousand miles of transmission. For example, the Western Area Power Administration is responsible for over 11,000 miles of transmission in the Pick-Sloan Missouri basin region alone.

The Western system and marketing operations are crucial not just to the REC's and municipal electric systems, but to the entire region and its electric utility grids.

The reduction in Full Time Equivalents will cost Pick-Sloan customers not just money but also expertise. Contractors can do excellent work, but when their work is done, they are gone -- sort of an instant institutional amnesia.

Forcing Western to fulfill its mission through use of outside contractor help diminishes the expertise Western can retain in-house. This is particularly true for technical staff who deal with engineering and environmental matters.

It will also mean that remaining staff will have to spend more time overseeing contracts, in addition to the responsibilities they already have.

Congress has charged Western with certain responsibilities in fulfilling its mission. Environmental issues are coming to the fore. The environmental issues which western must deal with today are complex and knotty problems.

Similarly, Western must maintain its role in the planning, construction, operation, and maintenance of the transmission system which delivers the power to our members. Much of the Pick-Sloan transmission system is old and needs replacement or upgrading.

The people who work at Western are a fine group of dedicated employees, but as you as Members of Congress know better than any of us, there are only so many hours in a day, and a person can only do so much.

In opposing the reduction in FTE's, we are not saying that we oppose any use of contractors by Western. In certain instances, it makes good business sense. There would be little point, for example, for WAPA to have its own construction crews to do all the work needed throughout its territory.

We are saying we oppose use of contractors when it is not cost-effective, or when it threatens to erode the capabilities of Western.

Does Western need all those employees and contractors? That is a question we cannot answer. It is a proper question to consider. But we think it a question that Western should be allowed to address in its own deliberations, rather than be imposed by others unfamiliar with Western's mission and responsibilities.

We understand that Western has established a cost containment task force to look at operations and costs to see what alternatives may exist. We applaud that kind of responsible investigation, and we certainly hope they come up with all sorts of cost savings -- lots of them! But we cannot applaud "blind-siding" Western with arbitrary staff cuts without any justification or assessment of their impacts.

The reduction in Full Time Equivalent positions will not affect the difficult deficit and budget problems this subcommittee must wrestle with.

We ask that Congress restore the staffing levels for Western; and if Congress feels that more might be able to be done, ask WAPA for its assessment of this issue. Our guess is that more federal employees might actually cost us less. That could be a win-win situation. It's certainly worth looking into.

Thank you.

TUESDAY, APRIL 3, 1990.

DEPARTMENT OF ENERGY PROGRAM

WITNESS

ANTONINE LAFATA SOTTILE

Mr. BEVILL. Mr. Sottile, your statement will be put in the record. You may proceed.

[The statement of Mr. Sottile follows:]

Mr. Antonine Lafata Sottile
Ph. Doctor of Engineering
P.O. Box 28292
Washington, DC
20038-8292

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Washington, DC Febr. 14, 1990

Honorable CONGRESS of The USA
HOUSE Appropriations Committee
Energy and Water Development
Subcommittee - Washington, DC
- 20515 -

REF.
By my present 25.th and 26.th Applications to This Honorable CONGRESS, I ask to Appropriate in Fiscal Year 1991, $.25.Million, in order to begin the practical Utilization of my Projects and Inventions, on behalf of The USA.
This required Monetary "Particle" in a budget above One Trillion $. could provide Initiatives to Solutions of problems concerning, Our COUNTRY's High Tech Advantage; National Energy independence; Economy; Environment; etc. in a GLOBAL Economy; Environment; etc.

Dear Chairman and Members of the Committee

Details about the other 24. Applications could be reached through the 2. Records at-hand for Fiscal Year 1990: SENATE Record part 2., HOUSE Record part 8. There my 5-page Report, together with a summary INDEX of the quoted Applications illustrates my project to get SOLAR Electricity "COMPETITIVE" with Electricity generated by ordinary sources: Oil, Gas, Coal, Nuclear.
Data assumed in my outline:
-ROBOTS in Earth's synchronous ORBIT providing unicolor, unifrequency Beams, impacting uninterruptedly on the same Photovoltaics of appropriate Band-Gap on Earth's surface.
Efficiency = 20. Kilo-Watt-Hours per square meter per day.
Nr. 120. selected SITES, each one equipped with 10. Million square meters of Photovoltaics, would generate 8.76 Trillion KWH.s/Year, that is the total ENERGY of Every kind consumed in one year in The USA. Only next Century could be possible to attain such enormous result. At the end of this second Millennium, each SITE should generate at least a fraction of its Top production = 73. Billion KWH.s/Year.

Nr. 2. reasons oblige us to CURB the burning of natural FUELS :
Firstly, their emission of gases damages the Environment :
The emitted CO.2 (Carbon Dioxide) develops a gaseous LAYER in the Upper Atmosphere, with the notorious GREEN-HOUSE Effect, which provokes the Warming of the GLOBE.

Second reason : The saved natural Fuels in the Future could become a MONETARY Guaranty : Natural resources STANDARD replacing the GOLD STANDARD, should the Natural Gold be Depreciated by the diffusion of Chemical Gold. SEE recently discovered methods of chemical Gold production.

The 3.rd page of my Report is the INDEX of the first 18 Applications quoting number of record and pages illustrating my Projects and Inventions.
Application Nr. 6. for Fiscal Year 1981 quotes my advise to save HELIUM mixed to natural Gas, by extracting the fraction of Helium, before burning the Gas and SEAL it inside exploited Wells of Gas, Oil, etc. for the future possibility of Helium Standard replacing Gold Standard.

Applications Nr. 1, and Nr. 2. of year 1975, illustrate my Project "LEANWAY" : A Leaning Subway, serviced by my INVENTION: WAGON EUREKA. In transportation They assure enormous savings of Energy in construction and operation.

Leanway's STOPS are at Earth Surface ; Wagon Eureka, with its BODY at permanent Levelness, mounts from Underground to the Stops.
No more Monster Escalators; its UNDERFRAME engaged in successive, steep Upgrades and DOWNGRADES assures FREE negative and positive ACCELERATIONS.

Pages Nr. 4. and Nr. 5. of my Report concern the problems of DEFORESTATION which contributes to worsen the Environment provoking the Warming of the GLOBE.
The Damage derived by the burning of Fuels and Wood with emission of CO.2 development of Green-House Effect, etc., as described before, no more is balanced by the useful function of TREES : To absorb CO.2, digest the C. (Carbon), and restitute to the Atmosphere the O.2 (Oxygen). An Average of 25,000 square miles of Forests are destroyed each year on the surface of EARTH.

Page 4. reproduces the huge extension of Forests in the Basin of the River AMAZON in BRAZIL. Area of the Basin = 2.8 Million square miles. It has been called "The LUNGS of the EARTH", for the great REGENERATION of OXYGEN.

Page Nr. 5. reproduces the Desert of SAHARA The REFORESTATION of this desert in the North of the African Continent could be a great Enterprise adequate to the tools at disposition of our Civilization. It could counter-balance the deforestation in Amazonia, and in other Areas and could provide Food and Jobs to the incremented Populations - Average RAINFALL in the SAHARA is LOW (4 to 24) INCHES/year.

Artificial Rainfall by CLOUD insemination could be profitable.
In Emergencies, fleets of DIRIGIBLES (Zepelins) carrying Water in the Air, to save CROPS in danger because of DROUGHT.
DIVERSION toward North PARTIALMENT of these rivers, that now decharge their Waters on the SEAS, and through several TUNNELS and HYDRO-Electric Installations, UTILIZE THESE Waters for CROP IRRIGATION in the Desert.
To exploit rationalment the AGUIFER Underground by WELLS.

THANK YOU

Mr. Antonine Lafata Sottile
Ph. Doctor of Engineering
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18) FY. 1987 SENATE Rec. Part 3. pp. 2133-2137 Hrgs.Apr.16.1986
17) " " HOUSE " " 8. " 1669-1675 " " " "
Project of SOLARdriven Liquid-Metal Magneto Hydro Dynamic Gener.
to yield Electricity.

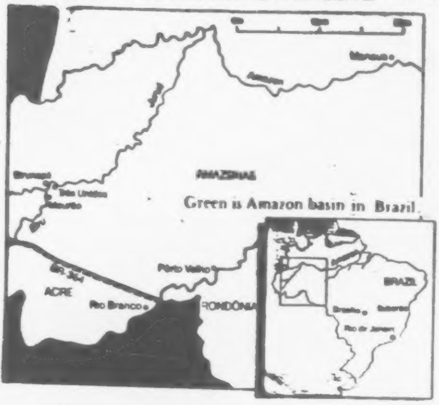
16) FY. 1986 SENATE Rec. Part 3. pp. 2693-2702 Hrgs.Apr.3.1985
15) " " HOUSE " " 9. " 3132-3141 " " " "
Project of a Network of underground Tunnels exploiting Gravity

14) FY. 1985 SENATE Rec. Part 4. pp. 2431-2436 Hrgs.Apr.3.1984
13) " " HOUSE " " 8. " 1430-1436 " " " "
Seven Immortal Principles: 1. Solar Energy 2. Electrification
3. Electro-Magnetic Flying 4. Energy Savings 5. Tunneling
6. Gradient Utilization 7. Wagon EUREKA Expansion -

12) FY. 1984 SENATE Rec. Part 3. pp. 1643-1653 Hrgs.Mar.24.1983
11 " " HOUSE " " 7. " 874-884 " " " "
The $. 25. Million of Appropriation required for: To build a
Wagon EUREKA Prototype - To experiment a SOLAR MIRROR in GEO-
-SYNCHRONOUS ORBIT
10) FY. 1983 SENATE Rec. Part 4. pp. 2711-2717 Hrgs.Apr.24.1982
9) " " HOUSE " " 8. " 2586-2593 " " " "
120. Solar Mirrors settled in Earth's Synchronous ORBIT could
provide the total Energy of every kind utilized in one year in
THE USA. : about 8.76 Trillion KiloWattHours/Year -

8) FY. 1982 SENATE Rec. Part 3. pp. 1932-1943 Hrgs. Mar.24.1981
7) " " HOUSE " " 10. " 2402-2411 " " " "
Planets VENUS and MARS CONDITIONED in a 50. Years lapse
vs. 1,000 Years proposed by Incompetents
6) FY. 1981 SENATE Rec. Part 3. pp. 953-957 Hrgs.May 16. 1980
Interior Commitee: HELIUM Standard replacing GOLD Standard, as
MONETARY Guaranty, next Century -
5) FY. 1981 SENATE Rec. Part 2. pp. 144-150 Hrgs. Apr. 16. 1980
4) " " HOUSE " " 7. " 615-619 " " 17. "
Appropriations on Transportation
3) FY. 1981 SENATE Rec. Part 3. pp. 513-514-515 Hrgs.Apr.2.1980
Appropriations on Agriculture : Useful INDUSTRIAL PRODUCTS by
HARVESTED PLANTS -
2) SENATE Committee on Commerce, Science and Transportation
Hearings Oct. 7-10 1975 on S. 1632 and HR. 8800 : ELECTRIC
VEHICLE Act RECORD 94-96 - My Statement pp. 161-164 on my
Project : LEANWAY = A Leaning Subway - Leanway's MOTTO :
"To build and to operate 2. Subways, like the DC. Area METRO-
-RAIL by the BUDGET needed for only ONE." "To move 5. alike
Subways by the Energy required for only ONE."
1) HOUSE Committee on Science and Technology. June 3-6 1975
HEARINGS on HR. 5470 ELECTRIC VEHICLE Act - RECORD 27.
pp. 728-740 : My INVENTION " WAGON EUREKA " assures 4/5 of
Energy Savings in Transportation by its UNDERFRAME engaged
in successive Down-grades and Up-grades, providing FREE
positive and negative ACCELERATIONS .

Smithsonian November 1989


AMAZONAS
Manaus
Amazon
Porto Velho
BR 364
ACRE
Rio Branco
RONDONIA
BRAZIL
Brasilia
Salvador
Rio de Janeiro

Green is Amazon basin in Brazil.

said an American official in Brasilia, whom I visited during a recent two-month flight by light aircraft around Brazil. "It all happens there." In the western Amazon, 1,500 miles away, an anthropologist who has worked there for ten years put all this hope in a few words: "It is the people who live from the forest who will save the forest."

These sentiments are widespread. During the past couple of years much of the worldwide concern about the environmental changes that seem to be accumulating around the planet has focused on the Amazon basin. This huge expanse—2.8 million square miles, an area nearly the size of Australia—has been described as the lungs of Earth, as the storehouse of genetic diversity and, because of its magnificent abundance of life, as the hiding place of cures for AIDS and cancer. Not only is it a myth that the forest tames the greenhouse effect as a net consumer of large amounts of carbon dioxide (the amount of CO_2 released by the burning and decomposing of vegetation exceeds what the forest takes up), but forest destruction, particularly by burning, has actually contributed to global warming. When, in the past few years, large-scale clearing and burning of the forest for farms and cattle ranches—encouraged by government incentives—clogged the Amazon's skies with smoke so thick that aircraft were grounded, and scientists suggested that the fires added to the greenhouse, the watchers began to crowd around.

The Amazon has become a vivid symbol of the interdependence of nation upon nation for the survival of life on the planet. And oddly, out of violence and martyrdom, and perhaps because of a human longing for saviors, some of the poorest, most powerless people on Earth—the men and women who gather latex from trees in the Amazon wilderness, and the Indians who live among them—have been assigned leadership in the task of protecting it.

SCIENCE

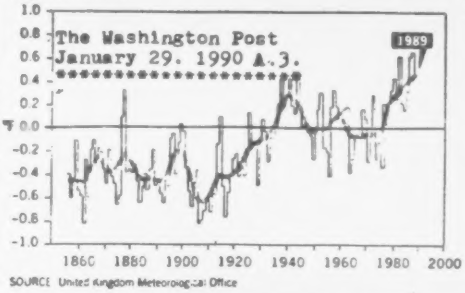
CLIMATOLOGY

Overheated Earth

THE WARMING WORLD

LONG-RANGE TEMPERATURE

Variation of annual surface temperatures for the world. The shaded line shows long-term trends. The planet has warmed on average by almost 1 degree Fahrenheit.



The Washington Post
January 29. 1990 A.3.
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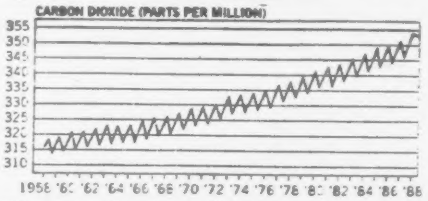
SOURCE: United Kingdom Meteorological Office

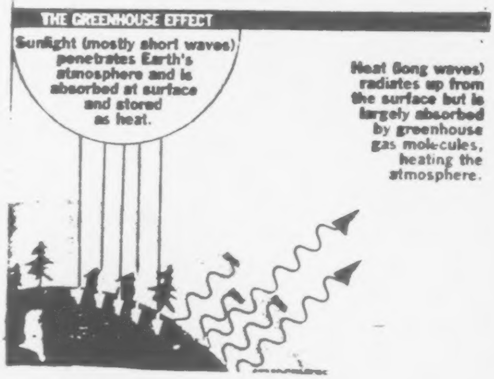
GREENHOUSE GAS

Carbon dioxide concentrations monitored at Mauna Loa, Hawaii. The gas traps heat close to the Earth's surface.



SOURCE: Charles Keeling, Scripps Institution of Oceanography

THE GREENHOUSE EFFECT


Sunlight (mostly short waves) penetrates Earth's atmosphere and is absorbed at surface and stored as heat.
Heat (long waves) radiates up from the surface but is largely absorbed by greenhouse gas molecules, heating the atmosphere.

AUGUST 1987

NATIONAL GEOGRAPHIC

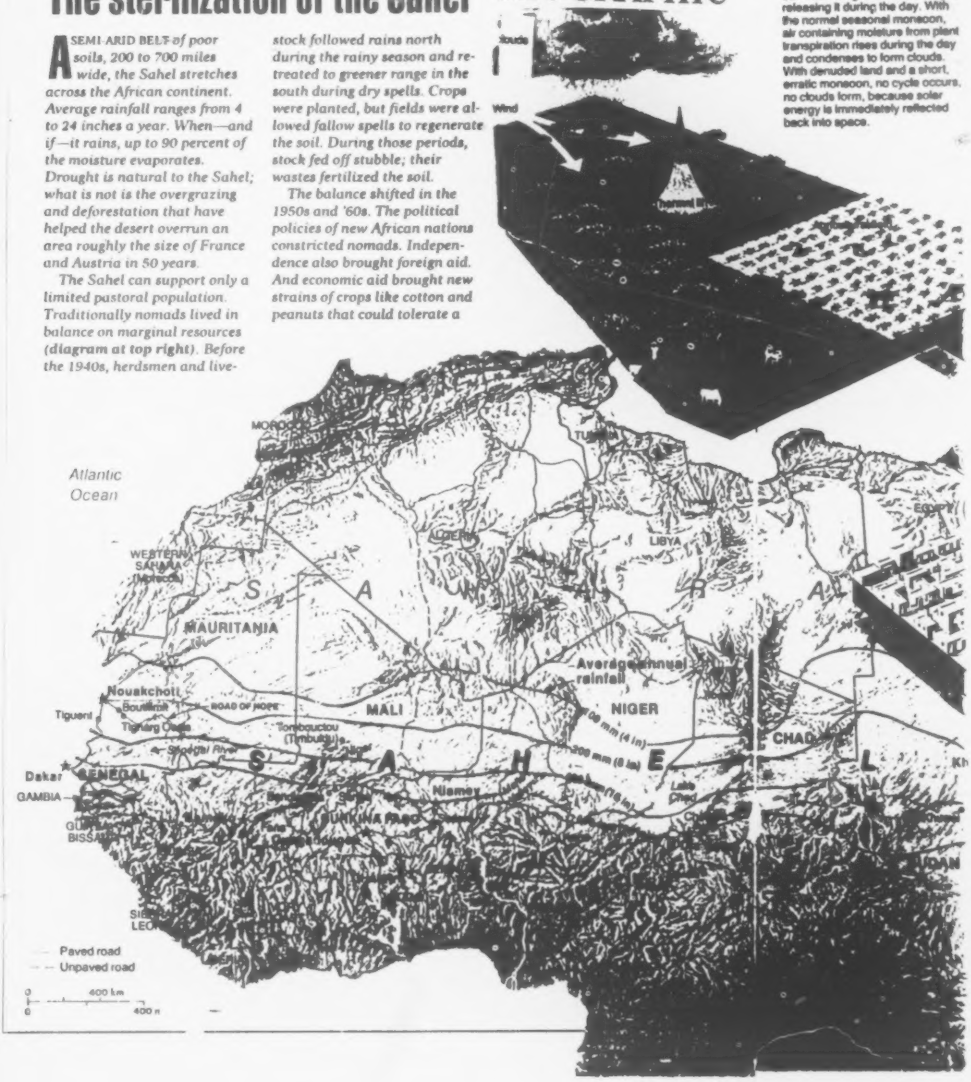
The sterilization of the Sahel

A SEMI-ARID BELT *of poor soils, 200 to 700 miles wide, the Sahel stretches across the African continent. Average rainfall ranges from 4 to 24 inches a year. When—and if—it rains, up to 90 percent of the moisture evaporates. Drought is natural to the Sahel; what is not is the overgrazing and deforestation that have helped the desert overrun an area roughly the size of France and Austria in 50 years.*

The Sahel can support only a limited pastoral population. Traditionally nomads lived in balance on marginal resources **(diagram at top right)***. Before the 1940s, herdsmen and livestock followed rains north during the rainy season and retreated to greener range in the south during dry spells. Crops were planted, but fields were allowed fallow spells to regenerate the soil. During those periods, stock fed off stubble; their wastes fertilized the soil.*

The balance shifted in the 1950s and '60s. The political policies of new African nations constricted nomads. Independence also brought foreign aid. And economic aid brought new strains of crops like cotton and peanuts that could tolerate a

drought? One theory says that if the potential for rain exists, a vegetated area is more likely to receive it. Vegetation blankets the soil – retaining solar heat at night, releasing it during the day. With the normal seasonal monsoon, air containing moisture from plant transpiration rises during the day and condenses to form clouds. With denuded land and a short, erratic monsoon, no cycle occurs, no clouds form, because solar energy is immediately reflected back into space.


Clouds
Wind
Atlantic
Ocean
MOROCCO
TUNISIA
ALGERIA
LIBYA
EGYPT
WESTERN
SAHARA
(Morocco)
S A H A R A
MAURITANIA
Nouakchott
Boutilimit
ROAD OF HOPE
Tiguent
Tidjikja
Tombouctou
(Timbuktu)
Senegal River
MALI
Dakar
SENEGAL
GAMBIA
GUINEA-
BISSAU
BURKINA FASO
Niamey
NIGER
Average annual
rainfall
100 mm (4 in)
200 mm (8 in)
(16 in)
Lake
Chad
CHAD
S A H E L
SUDAN
Kh
SIERRA
LEONE
Paved road
Unpaved road
0
400 km
0
400 mi

TUESDAY, APRIL 3, 1990.

CHILDREN'S HOSPITAL OF DETROIT, MICHIGAN

POSITRON EMISSION TOMOGRAPHY (PET) SCANNER PROJECT

WITNESSES

HON. CARL D. PURSELL, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MICHIGAN

THOMAS M. ROZEK, PRESIDENT AND CHIEF EXECUTIVE OFFICER, CHILDREN'S HOSPITAL OF MICHIGAN

ARVIN I. PHILIPPART, M.D., CHAIRMAN, SURGICAL SERVICES AND CHIEF, PEDIATRIC GENERAL SURGERY, CHILDREN'S HOSPITAL OF MICHIGAN

Mr. BEVILL. Next we have Children's Hospital of Detroit. The Chair recognizes Mr. Pursell.

Mr. PURSELL. I would like to take the opportunity to introduce some Michigan leaders, Mr. Ed Levy, who is a board member and current chairman of APEC for the United States, working on this special project with the Michigan congressional delegation. I have a letter I would like to put in the record, Mr. Chairman.

Mr. BEVILL. Without objection.

[The information follows:]

Congress of the United States
House of Representatives
Washington, DC 20515

March 7, 1990

The Honorable Tom Bevill
Chairman
Subcommittee on Energy and Water Development
Committee on Appropriations
2362 Rayburn HOB
Washington, D.C. 20515

Dear Mr. Chairman:

Last year, we wrote to you in support of a proposal by the Children's Hospital of Michigan, in conjunction with Wayne State University, to establish a Demonstration Pediatric Positron Emission Tomography (PET) Scanner project at Children's. Officials from Children's testified before your Subcommittee in 1989 and received favorable comments to their proposal.

PET technology is expected to enable clinicians to prevent, locate and treat diseases in children by assessing biochemical and physiological functioning of organs and providing a method of tracking a wide variety of disorders. Although children under age 15 constitute nearly 25 percent of the total United States population, the application of new technologies in the care of children, such as PET-scan, has been very slow. Research to develop new technologies is also a low-priority. For example, the National Institute of Health's Institute of Child Health and Human Development, responsible for the well-being of one in four Americans, receives only six percent of NIH's $7.8 billion budget.

To date, there are approximately two dozen PET-scans at adult hospitals nationwide, many of them federally funded. It is time to dedicate a PET-scan to children's research.

The Department of Energy has played a major role in the development of this technology, and we are requesting that the Subcommittee provide $8 million in the FY 91 Energy and Water Development Appropriations bill for this purpose.

We hope you will agree that the potential for this new technology is very promising for our children. We appreciate your consideration of this funding request.

Sincerely,

Bob Traxler

George Crockett

John Dingell

William Ford

Dennis Hertel

Dale Kildee

David Bonior

Sander Levin

William Broomfield

Carl Purcell

Bob Carr

Paul Henry

Robert Davis

Guy Vander Jagt

Fred Upton

Bill Schuette

John Conyers

Howard Wolpe

Mr. PURSELL. And I will introduce Tom Rozek, Chairman and CEO of the Children's Hospital. Many of the members of the Michigan delegation have toured and seen this facility. On behalf of my colleagues from the Michigan delegation we are happy to have you here and would let you make your comments within our five-minute limitation.

Mr. ROZEK. Okay.

Mr. BEVILL. Pleased to have each of you here. You may proceed as you wish.

Mr. ROZEK. Mr. Chairman and Members of the committee, I am Tom Rozek, President of Children's Hospital of Michigan. I am accompanied by Dr. Arvin Philippart, our chairman of the surgical services. We appreciate the opportunity to testify before the committee.

We come before you today to ask for your support for a technology transfer initiative that will finally bring the benefits of a new imaging technology to our nation's children. Children's Hospital of Michigan is proposing to establish a demonstration pediatric PET-Scan program, the first of its kind in the nation. This technology, called positron emission tomography, was originally developed by the Department of Energy. PET technology allows a clinician to assess the biochemical and physiological functioning of organs such as the brain and the heart which cannot be detected well by conventional forms of imaging.

PET-Scan application allows the medical community to gain insight into diseases and ailments such as epilepsy, brain tumors, strokes, and AIDS. The Federal Government plays an instrumental role in the development of many new technologies, particularly in the radiology field. However, the Federal Government has focused primarily on adult health care research and development at the expense of pediatric needs.

A recent search of health care literature indicates this slow rate of technology transfer. A search of all articles related to magnetic resonance imaging in the National Library of Medicine's data base on clinical medicine produced 4,768 articles. Only 1 percent of these articles related to children. Finally, of all of the articles on positron emission tomography scanning, only 3 percent applied to children.

This disparity in the rate of technology development and transfer and in Federal budget allocations has long been recognized by advocates for child health. While there are over 24 PET-Scanners operating in adult settings in the United States, several of which were federally funded, there is not one PET-Scan machine in the United States committed to the diagnosis and research of children's diseases and pediatric conditions.

Children's Hospital of Michigan is well suited to host a demonstration pediatric PET-Scan program because of its existing medical equipment and facilities.

The senior faculty of Children's Hospital of Michigan's radiology department has extensive credentials and experience with imaging technology, as well as the academic evaluation of such technology.

Children's Hospital has made a unique commitment to bringing the benefits of PET-Scanning to the pediatric environment. Children's has committed to fund over 60 percent of the cost of the program. Furthermore, Children's will conduct pediatric research with the intent to transfer this technology and research findings to other pediatric institutions throughout the nation.

In our brief time remaining, I have asked Dr. Philippart to describe a case in which PET-Scanning would be particularly helpful.

Dr. **Philippart**. Thank you.

At the outset, please understand that if we already had scientific proof of the value of PET-Scanning, we wouldn't be here requesting your support for a demonstration project. Scientific proof requires the application of technology followed by the collection and interpretation of data before drawing therapeutic conclusions.

However, the organ system where there is best demonstrated capability of PET-Scanning is the brain. Therefore, we are presenting the following example of surgical treatment of unmanageable epilepsy.

Seizures are a common problem in pediatrics whether the result of genetic errors, bleeding in the brain in premature neonates which results in cerebral palsy, head trauma, or meningitis. Our hospital cares for a large number of children in each of these categories. Many have seizures uncontrolled by the usual medications.

Surgical management for patients with uncontrolled seizures currently requires two operations—the first to place electrodes on the surface of the brain as well as needles into the substance of the brain, followed by a period of the brain causing the seizures. PET-Scanning would not only replace that first operation, but be much more accurate in identifying the site of the seizures to be removed in the single operation. This is only one of many presumed applications.

Our ability to generate important additional information on cerebral palsy, brain tumors, strokes in sickle cell anemia and congenital heart disease patients, and the late sequelae of head trauma are immense. There is a clear presumption that we can, armed with new information, reduce the morbidity in these children and reduce the decades of cost to society.

In summary, we have the patient population, physicians with expertise and the already existing programs to gather the information, provide appropriate intervention, and to communicate those findings to the medical community at large.

We do not have the resources to do this alone. Therefore, we ask for the approval of this demonstration project to benefit a large number of children, not only in Michigan, but nationwide.

We thank you for your support and your time.

Mr. **Bevill**. We will certainly work with Mr. Pursell on this, and we thank you each for your fine presentation.

Mr. **Pursell**. Thank you, Mr. Chairman.

[The statement from Children's Hospital of Michigan follows:]

Statement of Thomas M. Rozek

President, Children's Hospital of Michigan

Committee on Appropriations

United States House of Representatives

Subcommittee on Energy and Water Development

FY 1991 Budget

Children's
HOSPITAL OF MICHIGAN

A Subsidiary of
The Detroit Medical Center

Mr. Chairman and members of the Committee: I am Thomas M. Rozek, President of Children's Hospital of Michigan. I am accompanied by Dr. Arvin Philippart, Chairman of Surgical Services at Children's Hospital of Michigan. We appreciate the opportunity to testify before the Subcommittee.

We come before you today to ask for your support for a technology transfer initiative that will finally bring the benefits of a new state-of-the-art imaging technology to our nation's children. Children's Hospital of Michigan is proposing to establish a Demonstration Pediatric PET-Scan program, the first of its kind in the nation. This new medical technology, officially called Positron Emission Tomography, was originally developed by the Department of Energy under the aegis of its Nuclear Medicine Program. PET technology is a fourth generation imaging technology that allows the clinician to assess the biochemical and physiological functioning of organs such as the brain and the heart which cannot be detected well by conventional forms of imaging. PET-Scan applications allow the medical community to gain insight into diseases and ailments such as epilepsy, brain tumors, stroke, and AIDS.

The Federal government plays an instrumental role in the development of many new technologies, particularly in the radiology or imaging field. However, the Federal government has focused primarily on adult health care research and development at the expense of pediatric needs. Even though children under the age of 15 make up nearly 25% of the total population of the United States, the development and application of new technologies in the field of child health care is incredibly slow.

A recent search of health care literature indicates this slow rate of technology transfer. A search of all articles related to magnetic resonance imaging in the National Library of Medicine's data base on clinical medicine produced 4,768 articles. Only one percent of these articles related to children. Further, of the 226 "review articles", which are studies of more than a single case history, only 5 percent related to applications in pediatrics. The data base on computed tomography (CT) found 10 percent of the articles dealing with applications in children. Finally, of all of the articles on Positron Emission Tomography (PET) Scanning, only 3 percent applied to children.

Moreover, in recent years the budget for the National Institute of Child Health and Human Development has been fixed at only 6 percent of the total National Institutes of Health Budget. Furthermore, NICHHD sponsors less than 6 percent of all extramural research projects at NIH.

This disparity in the rate of technology development and transfer and in Federal budget allocations has long been recognized by advocates for child health. One Federally-developed medical technology which could successfully be applied to pediatric health care is Positron Emission Tomography (PET). While there are over 24 PET-Scanners operating in adult settings in the United States (several of which were federally funded), there is no PET-Scan machine in the United States committed to the diagnosis and research of children's diseases and pediatric conditions. The enormous Federal investment in this sophisticated technology has not been equally transferred throughout the medical community because of the lack of application to pediatric health care.

The expanded use of Positron Emission Tomography will dramatically increase the body of knowledge available for the research and diagnosis of specific biochemical functions of the body. Advances in brain research are demonstrating that the earliest and most specific changes occurring as a result of brain diseases are those that disturb the brain's underlying biochemical processes. These changes typically take place before conventional diagnostic techniques can detect physical alterations. PET technology will enable functional study of the living biochemistry of the brain, just as CT-scan and magnetic resonance imaging have improved the study of the body's anatomical structures.

Children's Hospital of Michigan is well suited to host a Demonstration Pediatric PET-Scan program because of its existing medical equipment and facilities, its faculty's extensive expertise and knowledge regarding other imaging technologies, and its commitment to funding more than 60 percent of the demonstration program. Children's currently has facilities suitable for all types of clinical care and research and a variety of imaging techniques, including cardiac catherization, ultrasound, interventional radiology, angiography, CT, and MRI, all used solely for children.

The senior faculty of Children's Hospital of Michigan's radiology department has extensive credentials and experience with imaging technology, as well as the academic evaluation of such technology. For example, the senior faculty have produced 6 books on pediatric imaging, have authored over 300 original articles, have contributed over 50 chapters to various other books, and during 1989 alone provided over 30 presentations to professional groups. Of the seven full-time pediatric radiology faculty members, three are board certified in both radiology and pediatrics, and three are full professors at Wayne State University School of Medicine.

Children's Hospital has made a unique commitment to bringing the benefits of PET-Scanning to the pediatric enviornment. Children's has committed to fund over 60 percent of the cost of the program.. Furthermore, Children's will conduct pediatric research with the intent to transfer the technology and research findings to other pediatric institutions throughout the nation.

In our brief time remaining, I have asked Dr. Philippart to describe a case in which PET-Scanning would be particularly helpful.

Thank you.

At the outset, please understand that if we already had scientific proof of the value of PET scanning, we wouldn't be here requesting your support for a demonstration project. Scientific proof requires the application of technology followed by the collection and interpretation of data before drawing therapeutic conclusions.

However, the organ system where there is best demonstrated capability of PET scanning is the brain. Therefore, we are presenting the following example of surgical treatment of unmanageable epilepsy.

Seizures are a common problem in pediatrics whether the result of genetic errors, bleeding in the brain in premature infants which results in cerebral palsy, head trauma, or meningitis. Our hospital cares for a large number of children in each of these categories. Many have seizures uncontrolled by the usual medications.

Surgical management for patients with uncontrolled seizures currently requires two operations - the first to place electrodes on the surface of the brain as well as needles into the substance of the brain, followed by a period of observation in the hospital before a second operation to remove the portion of the brain causing the seizures. PET scanning would not only replace that first operation, but be much more accurate in identifying the site of the seizures to be removed in the single operation. This is only one of many presumed applications.

Our ability to generate important additional information on cerebral palsy, brain tumors, strokes in sickle cell anemia and congenital heart disease patients, and the late sequelae of head trauma are immense. There is a clear presumption that we can, armed with new information, reduce the morbidity in these children and reduce the decades of cost to society.

In summary, we have the patient population, physicians with expertise and the already existing programs to gather the information, provide appropriate intervention, and to communicate those findings to the medical community at large.

We do not have the resources to do this alone. Therefore, we ask for the approval of this demonstration project to benefit a large number of children, not only in Michigan, but nationwide.

Appendix 1

PET-Scan Pediatric Applications

Epilepsy

The onset of epilepsy commonly occurs in infancy and early childhood. PET can be used to isolate the site of seizures, ensuring that surgical considerations (such as whether or not to perform surgery, or the specific site of surgery) can be made with greater accuracy. PET can be used to observe the ways drugs are metabolized and to help determine the efficacy of particular medications.

Schizophrenia

The onset of schizophrenic disorders most often occurs during adolescence. PET studies of schizophrenics have shown lower metabolic functions in certain areas of the brain, thus providing a better understanding of the pathophysiology of the disorder. These data can assist in the early diagnosis of schizophrenic disorders, the study of the interaction of drugs on the affected portions of the brain and the study of changing metabolic states of the brain as the disorder fluctuates from remission to acute stages.

Brain Tumors

Initial studies of brain tumors suggest that PET can help define their biological nature in terms of type, blood supply, and metabolic characteristics, and can assist in the selection of proper therapeutic intervention.

Stroke

In stroke, which can occur in children, severe brain damage is characterized by diminished cerebral metabolism of oxygen and diminished blood flow. PET can identify the areas of the brain that are damaged by stroke, as well as any areas that take over to correct or compensate for impaired physical and psychological functions

AIDS

Current medical literature reveals that AIDS has been discovered in infants as young as two months old. The incubation period, from the initial infection in the perinatal period to the onset of progressive encephalopathy (degenerative diseases of the brain), can vary from two months to five years. Specific manifestations of AIDS and AIDS Dementia Complex (ADC) in infants and children are both physical and developmental, and include: abnormal smallness of the head, muscle weakness and paralysis, seizures, lethargy, and a general absence of developmental milestones such as crawling, walking, increased attention span, and language acquisition.

Preliminary research using positron emission tomography in AIDS patients has revealed abnormal glucose levels in those suffering from ADC. Research into other types of neurological disorders has already shown that metabolic changes often occur before physical changes or symptoms of the disorders are apparent; PET can detect these metabolic changes. The importance of early treatment of ADC, perhaps at presymptomatic stages, cannot be overemphasized. This is particularly the case if, as some scientists hold, the drug therapies developed to combat the AIDS virus may not penetrate deeply enough into the brain to halt the body's degeneration.

Other Areas

In addition to the disorders listed here, PET technology will assist in the research and diagnosis of autism, developmental and learning disabilities, Attention Deficit Disorder (ADD), and mental retardation. PET can also be useful in evaluating drug and dietary therapies for a number of different disorders.

Mr. BEVILL. Now there is a Mr. Richard Irby who was not here earlier when I called his name. Is he here now? No? This committee will stand adjourned until 1:55.

AFTERNOON SESSION

TUESDAY, APRIL 3, 1990.

DOE RESEARCH PROGRAMS

WITNESS

JAMES P. HARTNETT, EXECUTIVE SECRETARY, MIDWEST UNIVERSITIES ENERGY CONSORTIUM, INC.

Mr. BEVILL. The committee will come to order.

The chair will recognize Mr. Hartnett. Your prepared statement will be made a part of the record. You may proceed as you wish.

Mr. HARTNETT. Thank you, Mr. Chairman, Members of the committee.

My name is James Hartnett. I am Professor of Engineering and Director of the Energy Resources Center at the University of Illinois at Chicago. Today I come before you as the spokesman for the Midwest Universities Consortium, 20 major research institutions in the big 10 states of Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio and Wisconsin.

I have appeared before this committee for several years now, pointing out that the funding of engineering research, with the time horizon of 5 to 20 years, is being "squeezed out" as we provide funds for long-term scientific efforts such as the Superconducting Super Collider and the Human Genome Project and short-term projects such as the Clean Coal Technology, and the Engineering Research component of Engineering and Geosciences (Basic Energy Sciences), slightly more than 15 million dollars, represents a reduction from its fiscal year 1990 level, in fact, the proposed budget is even lower than it was in fiscal year 1989.

The engineering and research component of the BES is less than 3 percent of the total operating budget. This number is shrinking year by year.

In brief, this funding level is totally inadequate to respond to our national needs. A doubling of this budget to $30 million would permit new engineering research initiatives in such important fields as bioprocessing technology, intelligent engineering systems, computational engineering and multi-phase flow.

Recognizing these concerns the Midwest Universities Energy Consortium in collaboration with the Argonne National Laboratory and Amoco Corporation has held two invitational workshops involving representatives from universities, industry, and national laboratories to discuss engineering research, particularly collaborative engineering research.

These two workshops, one on energy and one on mixed and chemical waste management, reaffirmed the need for increased support for engineering research if we are to remain competitive on the international level.

These workshops which involved leaders from the industrial sector took special note of the U.S. Department of Energy proposed 30 year $130 billion Environmental Restoration and Waste Management Plan that is the clean up of the defense related facilities of DOE.

The workshop participants recommended that DOE set aside a small percentage of the overall funding to carry out a companion long-range collaborative engineering research program involving universities, national laboratories and industry and having a time horizon of 5 to 20 years.

Such a program should involve a competitive peer review program and a relevancy review of DOE and by industry. The major advantage of the proposed initiative would be to reduce both the overall cost of the program and the time necessary to accomplish the mission. Furthermore, it would provide needed support for graduate education in environment al science and engineering. Last, but certainly not least, it would improve the U.S.'s competitive position in environmental technologies.

A measure of the commitment of industry to the proposed collaborative engineering research program is their stated willingness to participate in the financing of such an effort. A potential measure of success of collaborative effort would be the magnitude of the financial and technical involvement of American industry.

In summary, the Midwest Universities Energy Consortium recommends that the U.S. Department of Energy increase funding for the engineering research program of basic energy sciences to facilitate new engineering research initiatives; and the U.S. Department of Energy take advantage of the unique opportunities offered by the Environmental Restoration and Waste Management Plan to create cooperative engineering research partnerships involving universities, national laboratories and industry.

[The statement of Mr. Hartnett follows:]

Testimony

House Committee on Appropriations
Subcommittee on Energy and Water Development

Presented by

J.P. Hartnett
Executive Secretary
Midwest Universities Energy Consortium Inc.
P.O. Box 5478
Chicago, Illinois 60680
312/996-4490

April 3, 1990

TESTIMONY

My name is James P. Hartnett. I am Professor of Engineering and Director of the Energy Resources Center at the University of Illinois at Chicago. Today I come before you as the spokesman for the Midwest Universities Energy Consortium, representing the 20 major research institutions in the Big Ten States of Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio and Wisconsin (the names and locations of the member institutions are shown on Attachment 1).

I have appeared before this committee for several years now, pointing out that the funding of engineering research, with the time horizon of 5 to 20 years, is being "squeezed out" as we provide funds for long term scientific efforts such as the Superconducting Super Collider and the Human Genome project and short term projects such as the Clean Coal Technology program. As evidence of this trend let me point out that the proposed FY91 budget for the Engineering Research component of Engineering and Geosciences (Basic Energy Sciences), slightly more than 15 million dollars, represents a reduction from its FY90 level.

	FY89* Actual	FY90 Estimate	FY91 Request	Percent Change
Engineering	15,152	15,354	15,022	-2
Basic Energy Sciences Operating Expenses	416,014	456,518	503,629	+10

As the table shows, the proposed Engineering Research budget is even lower than it was in FY89. Furthermore, the Engineering Research component is less than 3% of the total BES operating budget and this number is shrinking year by year. In brief, this funding level is totally

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***Budget figures are in thousands of dollars**

inadequate to respond to our national needs. A doubling of this budget to $30 million would permit new engineering research initiatives in such important fields as bioprocessing technology, intelligent engineering systems, computational engineering and multiphase flow.

Recognizing these concerns the Midwest Universities Energy Consortium in collaboration with the Argonne National Laboratory and Amoco Corporation has held two invitational workshops involving representatives from universities, industry, and national laboratories to discuss engineering research, particularly collaborative engineering research. These two workshops, one on Energy and one on Mixed and Chemical Waste Management, reaffirmed the need for increased support for engineering research if we are to remain competitive on the international level.

These workshops which involved leaders from the industrial sector took special note of the U. S. Department of Energy proposed thirty year $130 billion Environmental Restoration and Waste Management plan. The workshop participants recommended that DOE set aside a small percentage of the overall funding to carry out a companion long-range collaborative engineering research program involving universities, national laboratories and industry and having a time horizon of 5 to 20 years. Such a program should involve a competitive peer-review procedure and a relevancy review by DOE and by industry. The major advantage of the proposed engineering research initiative would be to reduce both the overall cost of the program and the time necessary to accomplish the mission. Furthermore, it would provide needed support for graduate education in environmental science and engineering. Last, but certainly not least, it would improve the U.S.'s competitive position in environmental technologies.

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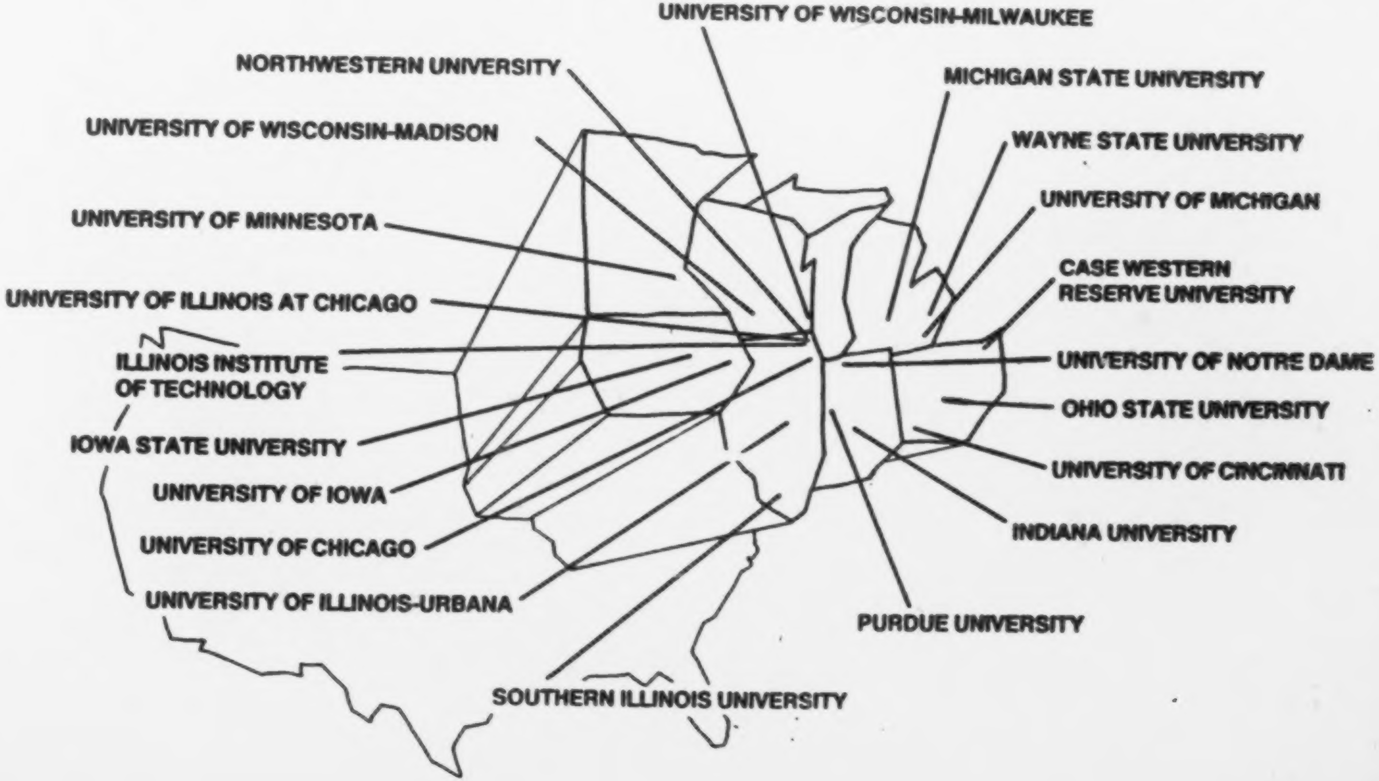
In summary, the Midwest Universities Energy Consortium recommends that:

- o The U. S. Department of Energy increase funding for the Engineering Research program of Basic Energy Sciences to facilitate new engineering research initiatives.
- o The U. S. Department of Energy take advantage of the unique opportunities offered by the Environmental Restoration and Waste Management Plan to create cooperative engineering research partnerships involving universities, national laboratories and industry.

MUEC Membership


UNIVERSITY OF WISCONSIN-MILWAUKEE
NORTHWESTERN UNIVERSITY
MICHIGAN STATE UNIVERSITY
UNIVERSITY OF WISCONSIN-MADISON
WAYNE STATE UNIVERSITY
UNIVERSITY OF MICHIGAN
UNIVERSITY OF MINNESOTA
CASE WESTERN RESERVE UNIVERSITY
UNIVERSITY OF ILLINOIS AT CHICAGO
ILLINOIS INSTITUTE OF TECHNOLOGY
UNIVERSITY OF NOTRE DAME
OHIO STATE UNIVERSITY
IOWA STATE UNIVERSITY
UNIVERSITY OF CINCINNATI
UNIVERSITY OF IOWA
INDIANA UNIVERSITY
UNIVERSITY OF CHICAGO
UNIVERSITY OF ILLINOIS-URBANA
PURDUE UNIVERSITY
SOUTHERN ILLINOIS UNIVERSITY

TUESDAY, APRIL 3, 1990.

BORON NEUTRON CAPTURE THERAPY PROGRAM

WITNESS

HON. JAMES A. McCLURE, U.S. SENATOR, FROM THE STATE OF IDAHO

Mr. BEVILL. I see our good friend and former colleague Jim McClure. We are glad to have you with us. This may be the last time you appear before this committee.

Senator McCLURE. I will respond a little bit as Strom Thurmond did to me. He said, "Jim, you are too young." I realize that is probably true, I probably am too young.

Mr. MYERS. You are too young to retire.

Senator McCLURE. Thank you, Mr. Chairman.

I don't know whether you gentlemen are familiar with the Boron Neutron Capture Therapy as a theory or as a program. I don't want to re-invent the wheel with you. I will ask unanimous consent to file my statement.

Mr. BEVILL. Without objection, it will be made a part of the record.

Senator McCLURE. The BNCT theory is that by injecting boron compounds into the blood stream of a cancer victim, the boron will concentrate in the cancerous tissue, and then when bombarded by neutrons will create a radioactivity within the cell, but only enough to kill the cell in which the activity takes place.

It is very specific to the sick cell. When we brought this up some years ago, the scientists told us, "Well, your theory is good, but it hasn't been proven." I am happy to say, now, after spending some years and some millions of dollars in testing the boron compounds, and running them through the reactors for the treatment of dogs with brain tumors, we can report that indeed the theory works.

I think it is time for us now instead of spending the money to keep an old reactor in standby, to spend the money to convert it. It will take another two to three years to get the conversion completed, but the Power Burst Facility (PBF) at Idaho National Engineering Laboratory is very unique, and would never be built for this purpose. It is far too expensive to be built for this. But it is there; it can be converted and it can be used. I appeal to you for the necessary money to get that underway.

But you are told and we are told, "We are not that sure, we shouldn't do it yet. Let me point out that the boron compounds have been tested, developed and certified as a result of the activities which you have supported in the past. The European Consortium, taking our research, our technologies, and our compounds are now building a reactor in which they will use them.

There are others who have assessed whether we are ready or not. They say we are. Nobody is going to build a PBF; it just happens to be the best in the world now and probably better than any that will ever be built for this purpose. It is just too expensive to build for this purpose alone.

Mr. BEVILL. Very good.

[The statement of Sen. James McClure follows:]

STATEMENT OF SENATOR JAMES A. MCCLURE
BEFORE THE APPROPRIATIONS
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
U.S. HOUSE OF REPRESENTATIVES

APRIL 3, 1990

MR. CHAIRMAN, I APPRECIATE THE OPPORTUNITY TO APPEAR TODAY ON AN ISSUE OF GREAT IMPORTANCE TO ME AND TO THOSE WHO WILL BENEFIT FROM THE MEDICAL TREATMENT I AM HERE TO DISCUSS. I AM SPEAKING SPECIFICALLY ABOUT A NOT-WELL KNOWN PROGRAM CALLED BORON NEUTRON CAPTURE THERAPY (BNCT).

BNCT IS A CANCER TREATMENT PROGRAM THAT USES HIGH ENERGY NEUTRONS TO DESTROY SPECIFIC MALIGNANT BRAIN TUMORS. THESE BRAIN TUMORS ARE KNOWN IN THE MEDICAL WORLD AS GLIOBLASTOMA MULTIFORME AND THERE CURRENTLY IS NO CURE. PRESENTLY, 5,000 PEOPLE IN THE UNITED STATES ALONE DIE OF THIS CANCER EACH YEAR. BASED ON EXTREMELY POSITIVE RESEARCH TO DATE, BOTH HERE AND ABROAD, I BELIEVE A CURE FOR THIS AND RELATED TYPE CANCERS IS CLOSE AT HAND. I AM HERE TODAY AS A SMALL PART OF AN EVEN GREATER EFFORT BY THE SCIENCE AND MEDICAL COMMUNITY TO ASSIST IN THE DEVELOPMENT

OF THIS TREATMENT, WHICH WILL BENEFIT NOT ONLY THE CITIZENS OF OUR COUNTRY, BUT THOSE OF THE WORLD.

SEVERAL YEARS AGO, I BECAME AWARE OF BNCT THROUGH WORK AND RESEARCH BEING CONDUCTED AT THE IDAHO NATIONAL ENGINEERING LABORATORY (INEL), A DEPARTMENT OF ENERGY FACILITY. RESEARCHERS AT INEL BECAME INTERESTED IN THIS THERAPY WHEN AN INEL EMPLOYEE'S RELATIVE DIED OF A BRAIN TUMOR. FOR THE RECORD, BNCT IS NOT NEW. MEDICAL RESEARCHERS HAVE BEEN EXPLORING ITS POTENTIAL FOR TREATING CANCER FOR MORE THAN 20 YEARS. CLINICAL BNCT HAS BEEN CARRIED OUT IN JAPAN ON PATIENTS WITH VARYING TYPES OF TUMORS WITH VERY ENCOURAGING RESULTS. IN THE UNITED STATES, INEL HAS PUT TOGETHER A COMPREHENSIVE NATIONAL PROGRAM WITH ACTIVE PARTICIPATION BY RESEARCHERS FROM THE UNIVERSITY OF WASHINGTON, WASHINGTON STATE UNIVERSITY, THE UNIVERSITY OF CALIFORNIA AT LOS ANGELES, OREGON HEALTH SCIENCES UNIVERSITY, IDAHO STATE UNIVERSITY, CORNELL, AND OTHERS.

BRIEFLY DESCRIBED, BNCT IS BASED ON THE NUCLEAR REACTION THAT OCCURS WHEN A NON-RADIOACTIVE BORON ATOM CAPTURES A SLOW, LOW ENERGY NEUTRON. AS AN EXCITED BORON ATOM DECAYS, IT EMITS RADIATION WHICH IS POTENTIALLY LETHAL TO CANCER CELLS. IN HUMAN THERAPY, A BORON COMPOUND IS INJECTED INTO A PATIENT'S VEIN AND IS CARRIED BY THE BLOOD SUPPLY TO THE TUMOR WHERE IT IS LOCALIZED

AND IN A POSITION TO CAPTURE THE LOW ENERGY NEUTRONS THAT A NUCLEAR REACTOR CAN SUPPLY. BECAUSE THE RADIATION IS FOCUSED ALMOST EXCLUSIVELY ON THE BORON COMPOUND, VERY LITTLE IF ANY DAMAGE IS DONE TO NON-MALIGNANT CELLS.

I WANT TO HIGHLIGHT THE FACT THAT BNCT IS ALSO BEING REVIEWED FOR THE TREATMENT OF MELANOMA, A SKIN TUMOR WHICH SPREADS RAPIDLY IN ITS EARLY STAGES. BY USING BORON COMPOUNDS THAT CONCENTRATE IN THE METASTATIC MELANOMA TUMOR SITES IN THE BRAIN AND ELSEWHERE, BNCT MAY FINALLY OFFER AN INNOVATIVE WAY TO TREAT THIS TUMOR WHICH IS TRADITIONALLY NON-RESPONSIVE TO CONVENTIONAL RADIATION THERAPY AND CHEMOTHERAPY.

THE MEDICAL COMMUNITY, AT A FEBRUARY 1988 BNCT WORKSHOP, CONCLUDED THAT INITIAL BNCT/MELANOMA TARGET SHOULD BE DEEP-SEATED, SINCE SURFACE MELANOMA IS EFFECTIVELY TREATED BY EXISTING PROCEDURES. HOWEVER, RESEARCH HAS PROVEN THAT SUCCESSFUL BNCT FOR DEEP-SEATED MELANOMA WILL REQUIRE A HIGH PURITY, INTERMEDIATE-ENERGY NEUTRON BEAM FOR ITS SKIN SPARING PROPERTIES. THIS IS CONFIRMED BY THE FACT THAT THE JAPANESE HAVE SUCCESSFULLY TREATED SUPERFICIAL MELANOMA IN PATIENTS AND NEED ONLY A BETTER NEUTRON SOURCE TO PROCEED WITH DEEP-SEATED MELANOMA.

I WOULD ALSO LIKE TO NOTE THAT BNCT RESEARCH IS EXPANDING TO INCLUDE WORK ON GOOD BORON DRUGS FOR THE TREATMENT OF ENDOCRINE DEPENDENT TUMORS, INCLUDING PROSTATE CANCER AND BREAST CANCER - TWO OF THE MAJOR CANCER KILLERS. ALL OF THESE PROGRAM EXPANSIONS, HOWEVER, REQUIRE DIAGNOSTIC TOOLS AND ANALYTICAL CAPABILITIES DEVELOPED BY THE INEL PROGRAM. AND A VITAL ELEMENT OF THIS PROGRAM INCLUDES A PURE, INTERMEDIATE ENERGY NEUTRON BEAM THAT CAN ONLY BE PROVIDED BY THE IDAHO POWER BURST FACILITY (PBF) REACTOR.

THERE ARE MANY DIFFERENT TYPES OF NUCLEAR REACTORS AND ACCELERATORS, BUT ONLY A FEW CAN BE USED FOR BNCT. THE TREATMENT REQUIRES A STRONG HIGH-INTENSITY BEAM THAT DOES NOT SCATTER RADIATION TO OTHER BODY PARTS. WITHOUT BEAM PURITY, LESS THAN 1 IN 10 HUMAN PATIENTS CAN BENEFIT FROM BNCT. AFTER SEVERAL YEARS OF RESEARCH, I AM CONVINCED, AS MANY OF THE RESEARCHERS AND DOCTORS INVOLVED IN THIS PROJECT ARE, THAT THE VERY BEST REACTOR IN THE WORLD TO BE USED FOR BNCT IS THE PBF LOCATED AT INEL.

PBF WAS ORIGINALLY BUILT AS AN EXPERIMENTAL REACTOR TO TEST SAFETY REQUIREMENTS AND WAS SLATED TO BE DISMANTLED. FOR THE PAST SEVERAL YEARS, I HAVE INCLUDED FUNDING IN THE DEPARTMENT OF ENERGY'S BUDGET TO MAINTAIN THE PBF IN A STANDBY MODE WHILE MORE RESEARCH WAS BEING CONDUCTED ON BNCT.

I BELIEVE THE TIME HAS ARRIVED TO MOVE FORWARD AND MODIFY THE PBF IN PREPARATION FOR CLINICAL TRIALS. RECENT RESEARCH ON DOGS WITH BRAIN TUMORS HAS PROVEN VERY SUCCESSFUL USING WORK AT INEL AND THE BROOKHAVEN MEDICAL RESEARCH REACTOR. I NOTE THAT THE BROOKHAVEN REACTOR NEUTRON FILTER WAS DESIGNED AND BUILT BY THE PBF/BNCT PROGRAM PARTICIPANTS TO GET AN EARLY START ON REQUIRED ANIMAL STUDIES. THE BEAM PARAMETERS, WHILE EXCELLENT, PREVENT THE USE OF THIS FACILITY FOR TYPICAL DEEP-SEATED HUMAN TUMORS. THE BROOKHAVEN REACTOR SEVERELY LIMITS THE RADIATION DOSE THAT CAN BE DELIVERED TO HUMAN TUMORS BECAUSE THEY ARE DEEPER IN NORMAL BRAIN TISSUE THAN THE DOG TUMORS TREATED SO FAR.

IN ADDITION, NEUTRON LEAKAGE THROUGH THE PRESENT BROOKHAVEN REACTOR BIOLOGICAL SHIELDING COULD BE LETHAL TO THE PATIENT FROM WHOLE BODY DOSE BEFORE THE TUMOR IS DESTROYED. MOREOVER, ADDITIONAL SHIELDING REQUIRED TO REDUCE THE PATIENT WHOLE BODY DOSE SEVERELY DEGRADES BEAM PERFORMANCE.

THE INEL PROGRAM OBJECTIVES ARE TO USE THE ONLY SUITABLE NEUTRON SOURCE, THE PBF REACTOR, (AND SPEND A FEW TENS OF MILLIONS OF DOLLARS) TO DEMONSTRATE THAT BNCT WORKS. THIS WILL ALLOW US TO DETERMINE NEUTRON BEAM PERFORMANCE REQUIREMENTS FOR OPTIMUM TUMOR CONTROL, MINIMIZED TREATMENT COST, AND MAXIMIZED PATIENT COMFORT AND CONVENIENCE. OUR FINDINGS WILL BE USED TO DESIGN AND BUILD

MEDICAL REACTORS IN MAJOR CANCER TREATMENT CENTERS. THESE MEDICAL REACTORS WILL COST $80 - 100 MILLION AND REQUIRE 8 - 10 YEARS TO BUILD AND LICENSE. ALTHOUGH THIS RESULTS IN A RELATIVELY SMALL COST PER PATIENT, THE LARGE INVESTMENT NECESSITATES USE OF THE PBF REACTOR TO DEFINE PROPER DESIGN REQUIREMENTS.

IT IS IMPORTANT TO RECOGNIZE THAT THE JAPANESE HUMAN BNCT TREATMENT SUCCESSES HAVE ALREADY LEAD TO A FINANCIAL COMMITMENT BY THE JAPANESE GOVERNMENT TO BUILD A SPECIALLY DESIGNED NUCLEAR REACTOR AND TREATMENT COMPLEX. THEY EXPECT TO START CONSTRUCTION IN THREE TO FOUR YEARS AND NEED BIOLOGICAL DATA AND NEUTRON BEAM PERFORMANCE REQUIREMENTS FROM THE INEL PROGRAM IN ORDER TO PROPERLY DESIGN THE MEDICAL REACTOR. THE JAPANESE PHYSICIAN LEADING THIS EFFORT MET WITH THE U.S. NATIONAL CANCER INSTITUTE RECENTLY, SEEKING A COLLABORATIVE ARRANGEMENT TO ADVANCE THEIR OBJECTIVES. IT APPEARS THAT THERE IS AN OPPORTUNITY HERE TO ADVANCE U.S. CANCER TREATMENT CAPABILITIES WITH JAPANESE COST SHARING.

IN ANOTHER PART OF THE WORLD, THE VERY LARGE EUROPEAN BNCT CONSORTIUM IS ALREADY MODIFYING ITS REACTOR AT PETTEN, THE NETHERLANDS (A BETTER NEUTRON SOURCE THAN THE BROOKHAVEN REACTOR, BUT NOT AS GOOD AS PBF) AND EXPECTS TO BEGIN PATIENT TREATMENT IN

1991 WITH AN EXISTING BORON DRUG - THE SAME ONE STUDIED IN THE INEL BRAIN TUMOR TREATMENT PROGRAM. AFTER LEADING THE RACE, OTHERS ARE NOW USING OUR TECHNOLOGY TO OVERTAKE US IN THE FINAL STRETCH.

WE KNOW THAT BNCT IS EFFECTIVE AND CAN BE DONE SAFELY. BUT, WE NEED THE OPPORTUNITY TO DEMONSTRATE ITS EFFECTIVENESS ON DEEP-SEATED TUMORS. FOR THOSE WHO SUFFER FROM GLIOBLASTOMA, THIS MAY BE THEIR ONLY HOPE. I THINK IT IS IMPERATIVE THAT THE CONGRESS APPROPRIATE THE NECESSARY FUNDS TO BEGIN CONVERTING THE PBF FOR THIS VITAL RESEARCH.

Mr. BEVILL. How much money are we talking about?

Senator McCLURE. I think—well, we are going to refine that, but it is in the order of $10 to $12 million.

Mr. MYERS. Would the reactor that you have in Idaho actually be used to treat the patients? You would have to have the patient come to Idaho to be treated?

Senator McCLURE. Yes.

Mr. MYERS. How is that different, Jim, from the radiolabeled monoclonal antibodies?

Senator McCLURE. You have to produce a reaction within the cancerous tissue. You can inject radioactive materials that will concentrate in some cells.

This is one that has no whole body reaction because there is no radioactivity until the compound is bombarded by neutrons. You need a source of "F" thermal neutrons in order to get at the deep-seated tumors. That is one of the reasons the PBF is so good. Doctors in Japan have used this therapy, but they operate, they open the brain, get as much of the tumor as they can then over about a 20 to 30 minute period they radiate the exposed tissue.

The PBF reactor will have high energy epithermal neutrons that can do the same thing in a very short period of time without even opening the skull. But it depends upon inducing the interaction rather than putting radioactive materials in that then migrate out the entire blood stream.

Mr. MYERS. This will be used only in brain tumors?

Senator McCLURE. They have used it to treat melanomas, the skin cancers. As the doctors will say, you can treat skin cancer while they are on the surface by surgery, and you don't need to do it this way.

If you get a deep-seated melanoma that has metastasized deep within the body's tissue and they can't reach it by surgery, this would be a good way of treating that melanoma. They have not done anything other than treating surface melanoma.

Mr. BEVILL. Thank you.

TUESDAY, APRIL 3, 1990.

DOE PROGRAMS

WITNESS

JOHN STOWELL, DIRECTOR, FEDERAL AFFAIRS, PUBLIC SERVICE INDIANA

Mr. BEVILL. Mr. John Stowell.

Mr. MYERS. Mr. Chairman, John has been around the Hill for several years here, a good friend from Indiana, another Hoosier. We don't get many Hoosiers here to testify, so I am pleased to welcome him here.

Mr. STOWELL. Thank you very much. Mr. Chairman, and Mr. Myers, my name is John Stowell. I am the Director of Federal Affairs for Public Services Company of Indiana, the largest investor-owned electric utility in my state.

I am appearing today on behalf of the Midwest Superconductivity Consortium, a partnership of six leading academic institutions and the private sector working in concert to close the gap between the potential of high temperature superconductors and their engineering practicality.

My company, Public Service Indiana, is a member of the consortium which is administered by one of the leading engineering schools in the nation, Purdue University, which is also located in Congressman Myers' congressional district.

PSI believes conductivity offers tremendous potential for applications in the electric utility industry. When cooled below a critical transition temperature, superconductors lose all resistance to the flow of electric current.

This property suggests that it might be possible to reduce or eliminate resistance in electrical systems, thus greatly improving efficiencies.

We can envision superconducting motors driving pumps, fans, compressors, conveyors and virtually every other kind of machinery. Superconducting technologies might be used in power generation, distribution and by consumers themselves, multiplying, at each level, the efficiencies inherent in superconductivity. A significant portion of the electric energy consumed in the United States today is used to power electric motors. Thus, breakthroughs in superconductivity mean better utilization of our country's current generating capacity. That is good for our economy, our energy security and our environment.

The Midwest Superconductivity Consortium agrees with the White House Office of Science and Technology that more research into the principles of superconductivity is needed. We are convinced that, from that research, will come a wealth of practical applications for superconductors.

With the private sector helping to shape the program, the Midwest Consortium has made, in its initial year, important strides toward the development of a comprehensive research strategy.

The consortium has requested $5 million for fiscal year 1991 to conclude projects being formulated this year and to augment them through a new competition for further research.

Thank you, Mr. Chairman, for the opportunity to testify. I will be happy to answer any questions you have.

Mr. BEVILL. Thank you for your fine statement.

[The statement of Mr. Stowell follows:]

TESTIMONY OF

JOHN STOWELL

ENERGY AND WATER SUBCOMMITTEE

HOUSE APPROPRIATIONS COMMITTEE

APRIL 3, 1990

Mr. Chairman and members of the Subcommittee, my name is John Stowell and I am the director of federal affairs for Public Service Co. of Indiana - the largest investor-owned electric utility in my state.

I am appearing today on behalf of the Midwest Superconductivity Consortium - a partnership of six leading academic institutions and the private sector working in concert to close the gap between the potential of high temperature superconductors and their engineering practicality.

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Thank you, Mr. Chairman, for the opportunity to testify. I'll be happy to answer any questions you have.

TUESDAY, APRIL 3, 1990.

FAST FLUX TEST FACILITY

WITNESS

HON. SID MORRISON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WASHINGTON

Mr. BEVILL. Next we have our good friend and colleague, Congressman Sid Morrison.

Sid, we are pleased to have you. I know you need to get back on your schedule.

Mr. MORRISON. Thank you, Mr. Chairman.

I guess I have to start by saying after my years of testimony in front of this subcommittee, how the lives of the people that I represent revolve around your decisions. I appreciate the pressures that you are under.

I would like to just mention three major items. Somewhere my written testimony is in circulation.

It is no surprise to you that the Fast Flux Test Facility, is something I will mention first. I want to thank you on behalf of the Washington State delegation for the firm position you took on the request from the department for reprogramming.

As you know, that reprogramming would have started a downward spiral that gave us no options at all. We really appreciate the firm position that you took.

Let me read this one graphic because I want to get it right.

I would like to clarify the record in regards to plutonium 238 production because I know you are under pressure on that. If plutonium 238 can be produced as a major adjunct to defense production at Savannah River the accounting principles used by DOE clearly indicate a cost advantage in doing it there.

Our goal at Hanford is to keep FFTF operating. It is not based on winning a sort of a wrestling match between the Washington and South Carolina delegations with you having to serve on this subcommittee as referees.

We just, we are basing our hopes on a host of other activities that we can bring in that will help pay the bill.

What we are asking is that the appropriations process not get in the way of our going now around the world, and there is a team formed to do this because there is a tremendous level of international cooperation on running FFTF now. We think that can be expanded dramatically.

What we want to do is reduce for you the pressures for dollars to operate that reactor. We think we can attract a significant outside source and we hope to be able to come to you with programs that can hold your budget exposure down to as little as it would take to terminate the reactor.

We feel strongly about that, and the State of Washington is cooperating enthusiastically with doing that.

In the area of medical isotope production that is for nuclear medicine with pharmaceutical companies and international cooperation and some potentials of demonstrating things like waste burn, utilizing defense waste dollars, we know your budget area is really pressured.

There is one other area that is vitally important to us. Hanford is being provided through a tri-party agreement with the Department of Energy and EPA and the Secretary of Energy's five-year plan a significant amount of money to start the environmental restoration process.

Admiral Watkins is really counting on a new facility as part of that. I am a little surprised this subcommittee has jurisdiction over it. I am delighted that you do. That is the Molecular Science Research Center and the Environmental Sciences Research Center.

The Administration has $6 million for each in this year's budget request and $5.2 million for construction. We hope those funds would not be diluted.

They seem to be the key in the Department of Energy's thinking in finding new techniques of drying up radioactive and mixed waste and finding lower costs, ways of dealing with the problem of waste at all Department of Energy facilities and potentially making breakthroughs in dealing with all sorts of toxic wastes.

The last, I would only mention that we hope you could fully support the Administration's request for the Global Environmental Change Program that is in place. It is coming along at a proper speed.

I know global warming is vitally important to us. We have a part of that, and think we will handle it in a way that it truly is an investment.

Thank you, sir, for your time.

Mr. BEVILL. Very good.

We will work with you and do the best we can.

[The statement of Hon. Sid Morrison follows:]

Testimony at Subcommittee on Energy and Water Development
House Committee on Appropriations
April 3, 1990
Hon. Sid Morrison (WA)

GOOD AFTERNOON. I AM PLEASED TO BE, ONCE AGAIN, TESTIFYING IN FRONT OF THE ENERGY AND WATER DEVELOPMENT SUBCOMMITTEE. I HAVE WRITTEN THE CHAIRMAN AND RANKING MEMBER WITH SEVERAL SPECIFIC ISSUES WITHIN THE SUBCOMMITTEE'S JURISDICTION, AND I WOULD LIKE TO TAKE THIS OPPORTUNITY TO ADDRESS JUST THREE MAJOR ITEMS.

I AM CONFIDENT MY INITIAL MENTION OF FFTF IS NO SURPRISE. I SINCERELY THANK THE SUBCOMMITTEE FOR ITS DECISIVE ACTION IN DENYING THE DEPARTMENT OF ENERGY REQUESTED REPROGRAM AND SHUT DOWN OF THE FAST TEST FLUX FACILITY. I KNOW THE OTHER MEMBERS OF THE WASHINGTON STATE DELEGATION JOIN ME IN EXPRESSING OUR APPRECIATION.

BEFORE I SAY ANOTHER WORD, I WOULD SIMPLY LIKE TO CLARIFY THE RECORD IN REGARDS TO PU-238 PRODUCTION. IF PU-238 CAN BE PRODUCED AS A MINOR ADJUNCT TO DEFENSE PRODUCTION AT SAVANNAH RIVER THE ACCOUNTING PROCEDURES USED BY DOE CLEARLY INDICATE A COST ADVANTAGE. OUR GOAL TO KEEP FFTF OPERATING IS NOT BASED ON WINNING ANY SORT OF A WRESTLING MATCH BETWEEN THE WASHINGTON AND SOUTH CAROLINA DELEGATIONS OVER PU-238, WITH THIS SUBCOMMITTEE SERVING AS REFEREE.

WHAT I ASK IS SIMPLY THAT THE APPROPRIATIONS PROCESS NOT STAND IN THE WAY OF WASHINGTON STATE'S EFFORT TO FIND NON-FEDERAL SOURCES OF FUNDING TO SUPPLEMENT THE OPERATION OF THIS PREMIER RESEARCH REACTOR. I PLAN ON BRINGING TO YOU SPECIFIC EXAMPLES OF PROCESS AND PRODUCT THAT MEET THE DEMAND OF THE PRIVATE SECTOR, WITH THE PRIVATE AND INTERNATIONAL PARTNERS PAYING FOR THEIR PRORATED COST OF REACTOR OPERATIONS. AT THE SAME TIME, THE DEPARTMENT OF ENERGY WOULD BE ABLE TO ORDER AND PAY FOR ONLY RESEARCH THEY AND YOU DECIDE IS IN THE NATIONAL INTEREST.

I WILL WORK WITH YOU TO IDENTIFY THE MEANS BY WHICH THIS CAN BE

ACCOMPLISHED WITH THE SMALLEST POSSIBLE BUDGET EXPOSURE. IN FACT, I BELIEVE WE CAN CONTAIN BUDGET EXPOSURE TO THAT REQUIRED TO SHUT DOWN THE REACTOR. AND, WE CAN DO THIS WITHOUT OFFENDING STRATEGICALLY IMPORTANT INTERNATIONAL RESEARCH COLLABORATORS.

I WOULD ALSO LIKE TO TAKE THIS OPPORTUNITY TO BRIEFLY MENTION A NEW AND IMPORTANT INITIATIVE WHICH THE DEPARTMENT OF ENERGY HAS ENDORSED -- THE ESTABLISHMENT OF THE MOLECULAR SCIENCE RESEARCH CENTER AND THE ENVIRONMENTAL SCIENCES RESEARCH CENTER. THE ADMINISTRATION REQUESTED FUNDING LEVEL OF $12 MILLION, PLUS $5.2 MILLION FOR CONSTRUCTION, MUST NOT BE DILUTED. THESE TWO NEW PROGRAMS WILL PAVE THE WAY TO MORE RAPID AND LESS EXPENSIVE CLEAN UP OF THIS NATION'S DEFENSE WASTES. THEY ARE AN EXCELLENT INVESTMENT IN THE FUTURE.

ANOTHER VERY IMPORTANT PROGRAM RELATES DIRECTLY TO ONE OF OUR GREATEST ENVIRONMENTAL CHALLENGES. I WOULD ASK THAT YOU FULLY SUPPORT THE ADMINISTRATION'S REQUEST FOR THE GLOBAL ENVIRONMENTAL CHANGE PROGRAM.

I THANK FOR FOR YOUR CONSIDERATION OF MY REQUESTS FOR FUNDING FOR MSRC, ESRC, AND GLOBAL WARMING AS WELL AS YOUR CONTINUED UNDERSTANDING OF OUR STRUGGLE TO KEEP THE FFTF CONTRIBUTING TO OUR ENERGY FUTURE.

TUESDAY, APRIL 3, 1990.

ADVANCED TECHNOLOGY RESEARCH CENTER

WITNESS

KARL REID, DEAN OF COLLEGE OF ENGINEERING, ARCHITECTURE AND TECHNOLOGY, OKLAHOMA STATE UNIVERSITY

Mr. BEVILL. I am going to recognize Mr. Wes Watkins, a very important member of the panel.

Mr. WATKINS. Thank you, Mr. Chairman.

I am delighted to be here for Dr. Reid's appearance. I would like to say he is Dean of Engineering and Architecture at my Alma Mater, Oklahoma State University.

I know he has got good support, because in the audience is my former staff assistant who used to be the liaison for this committee, Emily Ray Elliot and her new husband Charlie. Let me say we think the world of them.

Dr. Reid, we look forward to your testimony. Your entire testimony will be made part of the record. On behalf of the committee, I would like to ask you to just summarize it and give us the highlights of it.

Maybe we will have a chance to have a little dialogue.

Mr. REID. Thank you.

Mr. BEVILL. Dr. Reid, your prepared statement will be made a part of the record.

Mr. REID. Mr. Chairman, and Members of Congress, Ladies and Gentlemen, I thank you for the opportunity to be here with you today. I am pleased to represent also John Campbell, who could not be with us, and the Oklahoma State University.

I would like to put my statement in historical context first and then in the context of today.

Just one century and one year ago this month a land run in Oklahoma, unique in our nation's history, opened 2,000,000 acres of fertile farmland for settlement by homesteaders. Those who made this land run were from throughout the United States and Europe.

They were poor people looking for a new start with "free land" promised by the Federal Government. They went by foot, by horse and by wagon to claim their homestead. Imagine how primitive it must have been in Oklahoma Territory in 1889 barely more than 100 years ago.

The most remarkable thing about the land run story is the vision and determination of those early day settlers. They wanted to not only take advantage of opportunity, but to create opportunity. And their vision began to be realized when the first Oklahoma Territorial Legislature created the Oklahoma Agricultural and Mechanical College on December 24, 1890—just 20 months after the land run and 17 years before Oklahoma statehood.

Opportunity was created again in 1957, when the Oklahoma A&M College became Oklahoma State University. This is 1990, so it is the centennial year for Oklahoma State University. As we celebrate the past, we are also focusing on the future.

Whatever the issue, the efficient production and conservation of energy or the development and use of new materials or the protection of our environment and precious water resources or rebuilding a decaying infrastructure or producing manufactured goods that are competitive in a global economy or supplying a growing world population with food or developing a defense system that minimizes the chance for war, the Oklahoma State University can and will contribute to the human resources and technology development needed to meet these national needs.

One of our goals at Oklahoma State University is to continue to focus our human and capital resources in areas of strategic importance to the State of Oklahoma and to the nation.

Over the past several years we have developed strong instructional research and technology transfer programs related to energy conservation, alternative energy resources, ground-coupled heat pump technology and manufacturing processes which use large amounts of energy. We wish to further strengthen and expand our efforts in these priority areas and seek your assistance.

Oklahoma State University seeks $12.5 million in federal funds for its College of Architecture and Technology to construct a facility to house an Advanced Technology Center for research technology development and technology transfer on problems of energy conservation, storage and conversion and also for research on materials such as plastic and composites used in the manufacturing and on manufacturing processes that consume large amounts of energy.

The new facility will allow us to consolidate energy related research and development activities carried out in six different buildings on the campus, several of which are substandard.

Mr. BEVILL. Your time is up. But we would like to hear what you have to say. Take about 30 seconds and wrap it up.

Mr. REID. Yes, sir.

The important thing about the Advanced Technology Research Center is that we need a building to consolidate activities and to expand those activities.

We have had a recent happening in Oklahoma where the university has received two programs of excellence grants from the State of Oklahoma, which makes this need even more urgent.

As the early day settlers, we wish to create opportunity which we think we can do with this new facility.

I appreciate your time.

[The statement of Mr. Reid follows:]

Prepared Statement for the Subcommittee on

ENERGY AND WATER DEVELOPMENT

of the

HOUSE APPROPRIATIONS COMMITTEE

April 3, 1990

by

Karl N. Reid, Dean

College of Engineering, Architecture and Technology

OKLAHOMA STATE UNIVERSITY

Stillwater, Oklahoma

EXECUTIVE SUMMARY

Oklahoma State University seeks $12.5 million in Federal funds for its College of Engineering, Architecture and Technology to construct a facility to house an Advanced Technology Center for research, technology development and technology transfer on problems of energy conservation, storage, and conversion, and also for research on materials such as plastics and composites used in manufacturing and on manufacturing processes that consume large amounts of energy.

The motivation for such research is the realization that until an abundant source of clean cheap energy is found -- a situation not now in sight -- the prudent course is to practice energy conservation and to develop materials and manufacturing processes that make more effective use of currently available energy resources. Solutions to the energy efficiency problems will also contribute to the economic competitiveness of products made with these processes and materials.

The need for the Advanced Technology Center results from the success and growth of current activities devoted to the problem area. The space to expand the research and development effort, as well as space to facilitate the technology transfer of the results, has become critically inadequate.

PREPARED STATEMENT

Mr. Chairman and Members of Congress, Ladies and Gentlemen, thank you for the opportunity to appear before you today on a matter that we believe is of great importance to the nation, as well as to our institution.

Just one century and one year ago this month, a **land run** in Oklahoma -- unique in our nation's history -- opened 2,000,000 acres of fertile farmland for settlement by homesteaders. The run began with the firing of a gun at 12:00 noon on April 22, 1889. And Stillwater, the home of Oklahoma State University, was settled that day. Those who made the land run were from throughout the United States and Europe. They were poor people looking for a new start with "free land" promised by the Federal government. They went by foot, by horse and by wagon to claim their homestead. Imagine how primitive it must have been in Oklahoma Territory in 1889!

The most remarkable thing about the land run story is the vision and determination of those early day settlers. They wanted to not only take advantage of opportunity, but to create opportunity. And their vision began to be realized when the first Oklahoma Territorial Legislature created the Oklahoma Agricultural and Mechanical College on December 24, 1890 -- just 20 months after the land run and seventeen years before Oklahoma statehood!

Opportunity was created again in 1957 when the Oklahoma A&M College became Oklahoma State University. Today, Oklahoma State University is a coeducational, multi-cultural, multidimensional and comprehensive institution committed to excellence in serving the needs of the State and the Nation. Following the tradition of the Nation's land grant institutions, Oklahoma State University has three main missions: to instruct, to conduct research and to carry technology transfer services beyond the confines of the campus through extension.

This is centennial year at Oklahoma State University. As we celebrate the past, we are also focusing on the future. We recognize the challenges of preparing our graduates for a dynamic and changing world, where the magnitude of the problems to be solved seems to be ever increasing. Further, we know that it is critical that we continue to give priority to advancing fundamental knowledge through research in areas of strategic importance to the State and Nation. Finally, we accept our key role in supporting industries through a rich variety of technology transfer mechanisms. Whatever the issue -- the efficient production and conversion of energy, or the development and use of new materials, or the protection of our environment and precious water resources, or rebuilding a decaying infrastructure, or producing manufactured goods that are competitive in a global economy, or supplying a growing world population with food, or developing a defense system that minimizes the chance for war -- the Oklahoma State University can and will contribute to the human resource and technology development needed to meet these challenges.

Oklahoma and the surrounding oil-producing states have experience with a fossil-fuel-based economy in serious decline. We realize that the apparent surplus of these fuels now, particularly petroleum, buys us time to anticipate and circumvent an impending crisis related to future energy supply. We are consuming our fossil fuel supplies at thousands of times faster than nature is storing them! Our national energy policy places high reliance on engineers and scientists to develop suitable alternative energy sources to replace those on which we now rely.

We propose an approach that begins with the recognition of the need for a comprehensive research program in energy conservation, storage, and conversion. This beginning must be complemented with research on the use in manufacturing of materials which place high demands on the supply of energy.

The urgency of such a program is supported by the following: (1) efficient use of energy in manufacturing and producing not only reduces costs to improve economic competitiveness, but conserves fuel supplies for the many other demands that are placed upon them; (2) natural gas is the feed stock in the production of fertilizer that is so important to the production of food; (3) natural gas is also an important ingredient in the production of plastics and synthetic materials that have become a part of many manufactured products that we will need both near- and long-term; (4) demands for heating and refrigeration require improved processes to reduce and thus stretch out demands on existing energy resources; (5) transportation consumes roughly one-fourth of the energy we now use. Conservation through improved methods will surely become a high priority as we are forced to make choices between adequate food, comfort, goods, and travel.

Oklahoma State University and its College of Engineering, Architecture and Technology propose that $12.5 million be provided for a new building to house the **Advanced Technology Center** that will focus on these pressing issues. The new building will allow us to consolidate energy-related research and development activities now carried out in six different buildings, several of which are substandard. One of the key buildings presently in use is a World War II quonset hut! Of particular importance is that the new building will allow us to expand our energy-related research, technology development and technology transfer activities to a level consistent with the challenge we face.

We wish to expand our manufacturing research involving composite materials and plastics. This research is particularly important because these materials are increasingly replacing metals in applications such as aircraft and defense systems, automobiles and home appliances, and have shown promise as high-temperature superconductors. These materials not only utilize petroleum and gas as ingredients, but their formulation, blending, extruding and molding are all processes requiring significant energy input. The competition for natural gas and the potential impact on the cost of products made from these materials become obvious.

We also wish to expand our research into the technology and mechanisms of energy storage so vital for use with solar, wind, and tidal sources. Parallel research is needed in synthetic fuels that provide not only a means of storing energy, but a convenient means of facilitating its transport to the point of use. If biomass conversion is to become a significant source of energy, the end result will probably be a form of synthetic fuel.

Research into manufacturing processes will attempt to achieve not only cost reductions that can restore some of the competitive advantage lost in recent years, but also contribute to energy conservation which we believe to be the only prudent approach pending discovery of new and abundant sources of clean energy. Although we admittedly expect to utilize the results of our research to infuse advanced technologies into Oklahoma industries and attract new industry to Oklahoma to supplement the industrial base that has been too narrowly confined to petroleum and agriculture, we believe the problems to be researched are of national significance, and success in our research will contribute to the nation, as well as have applications world-wide.

Indeed, the need we have described is critical. Oklahoma State University is well qualified to undertake the research that would be necessary, not alone, but as one of a number of institutions that share our concern. The problems are of a magnitude that the efforts of many of us will be required if we are to find solutions in time to avert the trauma in the long run that will surely accompany a lack of attention in the short run.

Oklahoma State University is a member of the Oak Ridge Associated Universities, although this is the first time the University has sought federal support for capital projects to house the kinds of research that the consortium undertakes. The University currently has contractual relationships with Oak Ridge, Livermore, and Los Alamos Laboratories, and previously has had contracts with Sandia Laboratories. A large number of Oklahoma State University graduates are employed at Sandia Laboratories. Several engineering and science faculty members have held positions in DOE National Laboratories.

We can point to examples of technology transfer to industry from our energy-related research and technology development. For example, a new manufacturing process has been developed for producing fluid pump impellers which reduces both energy and cost of production by 90%.

Another example of significant technology transfer involves research in the processing and handling of materials in a continuous, flexible, strip form -- or webs. The Web Handling Research Center (WHRC) is one of forty National Science Foundation Industry/University Cooperative Research Centers. The WHRC has provided technical assistance to paper and plastic film products manufacturers throughout the nation. This center is cooperatively funded by fifteen industrial firms including DuPont, Eastman Kodak, Kimberly-Clark, 3M, Mead, Mobil Chemical and Polaroid. The center also has ties with the Materials Handling Center at Georgia Tech. Through application of Oklahoma State University research findings, the WHRC sponsors have been able to make significant improvements in their manufacturing processes and machines. The result has been a more consistent product quality and higher margin of profit. Our goal is to develop ways to significantly reduce energy consumption in the manufacturing and processing of web materials.

The research in each of the areas described above has been under way for several years, but space has become critically short. A new building has been a top priority on the campus since 1985. We seek $12.5 million dollars in federal funds for the building, and propose to raise a comparable amount from state and private sources to equip it. A recent development makes this request of particular importance and urgency. In a recent state wide competition, two nationally recognized research programs of excellence at Oklahoma State University were chosen for significant additional funding by the state of Oklahoma. These two programs are key parts of our Advance Technology Center, and include technology development and transfer in integrated manufacturing and laser-based optoelectronic systems.

With the new facility we can greatly expand our research and technology development programs to the extent that the time available, which we believe is relatively short, may produce meaningful solutions to problems we face. Furthermore, the experience gained in our current activities gives us confidence that technology transfer of the solutions is a function that we can undertake effectively.

I appreciate the time and consideration you have given. Thank you.

Mr. BEVILL. Mr. Watkins.

Mr. WATKINS. Is this work a consortium?

Mr. REID. New programs of excellence involves three universities. Oklahoma State University, University of Oklahoma, and University of Tulsa. One is in integrated manufacturing. One is in laser technology.

Mr. WATKINS. You are trying to use this in other colleges and other things like that?

Mr. REID. Absolutely.

Mr. WATKINS. Thank you.

TUESDAY, APRIL 3, 1990.

DOE NUCLEAR MEDICINE APPLICATIONS PROGRAM

WITNESSES

DR. R. EDWARD COLEMAN, PROFESSOR OF RADIOLOGY AND DIRECTOR, NUCLEAR MEDICINE, DUKE UNIVERSITY MEDICAL CENTER

DR. RICHARD A. HOLMES, PROFESSOR OF MEDICINE, RADIOLOGY AND NUCLEAR ENGINEERING, CHIEF, NUCLEAR MEDICINE, UNIVERSITY OF MISSOURI

Mr. BEVILL. Dr. Edward Coleman.

Dr. Coleman, we are pleased to have you with us. You may proceed as you wish.

Dr. COLEMAN. Thank you, Mr. Chairman, Members of the subcommittee.

I am Edward Coleman, Professor of Radiology and Chief of Nuclear Medicine at Duke University Medical Center.

Mr. Myers, I am a Hoosier by background. I testified before this subcommittee last year at this same time. I was pleased to see Duke in the final four games this year.

I am here today representing the Society of Nuclear Medicine, the American College of Nuclear Physicians, the two national organizations that represent over 12,000 physicians, scientists, chemists, physicists, and other professionals engaged in nuclear medicine research and clinical practice.

We are appreciative of the opportunity to appear before you today to discuss or funding recommendation for the DOE Nuclear Medicine Research Program.

The society and college have testified before the committee for the past five years in an effort to raise awareness of the dire funding crisis facing the DOE Nuclear Medicine Research Program.

The recent opportunities in nuclear medicine are intensifying rapidly but the funding for the research has been flat or declining over the past 10 years after adjusting for inflation.

Since cost-control and cost-effectiveness will remain as a dominant theme in the decade ahead in health care, the economic benefits of continued research and the practical applications of nuclear medicine are even more important.

We appreciate the funding increases that have been advocated by the committee. These increases have not been sufficient to support the new technologies available within nuclear medicine.

I would like to describe for you examples of DOE supported research activities which contribute to improved medical care and significant cost reduction.

The first is the use of PET, Position Emission Tomography, in the evaluation of cardiac disorders such as chest pain. These technologies have been used in determining regional myocardial damage whether damage is permanent or reversible.

The importance and cost effectiveness of these myocardialities are demonstrated by the patient with chest pain admitted to the hospital in the CCU 1000 or so a day. Whether they have had damage or not is determined by these technologies. The cardiocatherization is determined by these technologies.

Another example is the role of these technologies in neurologic diseases such as Alzheimer's, Parkinsons, stroke. These are making major inroads in the diagnosis and therapy of these disorders.

The last example is monoclonal antibodies, new technologies being used to treat particularly cancer. The DOE sponsored research played a major factor in these developments.

Nuclear medicine research is dependent on a reliable supply of new radioisotopes some of which are only available from DOE-sponsored facilities. The DOE reactor, such as was talked about at Hanford and accelerators that produce these isotopes are not dedicated to providing a continuous reliable supply of radioisotopes for biomedical research. The society and college urge this committee to encourage DOE to continue to expand its support for radioisotopic research in the basic and applied sciences.

Immediate attention and support of our existing facilities is necessary to prevent their further deterioration and reduce our dependence upon foreign suppliers of radioisotopes. Many of our radioisotopes we use daily now are not available from the United States. This does not speak good for the clinical and research activities in the United States.

This dependence only serves to retard research activities as well as discourage any commitment to future investigation in nuclear medicine. I have attempted to illustrate for you the achievements of research activities in nuclear medicine supported by DOE as well as concerns of the nuclear medicine community.

At the DOE's present funding level the progress and accomplishments of nuclear medicine are threatened. The society and college recommend a 10 percent increase in the nuclear medicine application program in fiscal year 1991 to a level of $41,409,500. We make this recommendation fully aware of the current deficit problem.

Nevertheless, we also make this recommendation as we believe that the availability of the most appropriate radioisotopes and radiopharmaceuticals for use in diagnostic and therapeutic nuclear medicine procedures is crucial in addressing the health care needs of the public. More than 10 million nuclear medicine procedures are performed each year in the U.S. This peaceful and worthwhile use of nuclear energy should not be compromised.

The society and college appreciate the continued support of the committee as well as the opportunity to present our views.

Thank you.

[The statement follows:]

ACNP

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SNM

American
College of
Nuclear
Physicians

The Society
of Nuclear
Medicine

STATEMENT OF

THE SOCIETY OF NUCLEAR MEDICINE

and

AMERICAN COLLEGE OF NUCLEAR PHYSICIANS

concerning the

DEPARTMENT OF ENERGY'S FISCAL YEAR 1991 BUDGET

for the

MEDICAL APPLICATIONS PROGRAM

submitted to the

ENERGY AND WATER DEVELOPMENT SUBCOMMITTEE

of the

HOUSE COMMITTEE ON APPROPRIATIONS

April 3, 1990

The Society of Nuclear Medicine (Society) and the American College of Nuclear Physicians (College) are pleased to offer the following statement regarding the Department of Energy's Fiscal Year 1991 Medical Applications program. The Society of Nuclear Medicine is a scientific organization of 10,000 members including physicians, physicists, chemists, radiopharmacists, technologists and other professionals engaged in the clinical and research practice of nuclear medicine. The College is a professional organization representing more than 1,600 physicians and scientists actively engaged in the practice of Nuclear Medicine.

SUMMARY

The Administration's FY 1991 budget proposal seeks $37,015,000 for the Department of Energy (DOE) Medical Applications program. We do not believe this funding level is sufficient, given that over the past decade the DOE Medical Applications research budget has been flat or declining, after adjusting for inflation. The Society and College fully support this program and recommend a funding level of $41,409,500 or an increase of 10% from FY 1990.

The College and Society appreciate the severe budget constraints that the Congress, and your Subcommittee, must consider in addressing FY 1991 budget needs. However, previous research activities resulting from the DOE's Medical Applications Program, designed to enhance the applications of both radioactive and stable isotopes, has contributed significantly to the health care delivery system in the United States. In order to continue the progress and momentum achieved in the field of Nuclear Medicine, it is imperative that funding for research efforts be increased and not appropriated as a random designation.

The declining financial support of research exacerbates the problem of the lack of national resources (for example, accelerators, reactors) to produce radioisotopes. In the foreseeable future, radioisotopes may only be available from foreign sources. Of note, the sole domestic supply of a radioisotope critical to Nuclear Medicine (Molybdenum-99) has been interrupted indefinitely and a Canadian manufacturer is the only alternative source for the interim. To limit the current reliance on foreign sources for radioisotope production, there is the opportunity to expand the utilization of several production facilities located throughout the country. These types of constructions would act as a catalyst to advance basic research and the application of radioisotopes in nuclear medicine. This is also dependent upon Congressional support of the DOE, who would develop and supervise these facilities. At the DOE's present funding level, none of this can be accomplished.

WHAT IS NUCLEAR MEDICINE TODAY?

In a typical Nuclear Medicine procedure, the imaging study, a very small amount of a radioisotope is administered by injection. This radioisotope may be designed specifically to concentrate in a certain organ, or to be metabolized or removed from the body by a particular route. Certain radioactive drugs or radiopharmaceuticals are designed to concentrate only in abnormal tissue such as cancer cells or compromised heart muscle. The transit is recorded by instrumentation which images the distribution of the radioactive preparation in the body. Data derived from the examination may also be processed by computer, producing improved images and quantitative information about organ function. Radiopharmaceuticals may also be used in the treatment or palliation of disease.

Diagnostic in vitro examinations encompass certain tests (radioimmunoassay) in which a sample of body fluid is mixed with a radioactive reagent. These tests are used to determine the presence of cancer antigens, the precise concentration of various hormones, vitamins and drugs and to identify pollutants or other toxic materials in the environment. Radioimmunoassay techniques permit early discovery of tumors and metastases before they become clinically evident.

HOW EFFECTIVE ARE NUCLEAR MEDICINE PROCEDURES?

The Society and the College believe that Nuclear Medicine procedures enhance the diagnostic process by reducing total health care costs, decreasing the patient's length of stay as well as the patient's suffering by rapidly directing patient treatment. In addition, Nuclear Medicine procedures often provide more useful information about the patient's problems than other data available from alternative diagnostic modalities, many of which are much more costly. Nuclear Medicine studies provide a "snapshot" of the metabolic activity at the time of the image, as opposed to other imaging procedures such as radiography which reveal only anatomic information. With the advent of the Resource Based Relative Value Scale and other emerging cost containment methods, the cost effectiveness of most medical procedures will be carefully scrutinized. We are confident that Nuclear Medicine will fare well under this review.

Nuclear Medicine techniques are especially versatile for basic research in the chemical, biological and physical sciences. Since techniques are similar, data in these areas are easily expanded into clinical research, allowing rapid application of information from the research laboratory to hospital practice. DOE supported research is conducted in five primary areas: stable isotope research, radioisotope development, radiopharmaceuticals, instrumentation and clinical feasibility.

The following are a few of many such applications, demonstrating the importance of a continuing high level of research:

CARDIAC NUCLEAR IMAGING

One of the most dramatic examples of the rapid transfer of research developments to the hospital is the non-invasive study of the heart. According to American Heart Association statistics (1987), approximately 500,000 individuals succumb to heart attacks each year. The number of deaths from heart attack far exceeds the number of deaths from all cancers. Forty-five (45%) of individuals suffering their first heart attack are under age 65; 5% are under age 40. Early identification of persons at risk had previously been difficult. Nuclear diagnostic techniques are significantly more sensitive and less risky in identifying individuals with coronary artery disease than are other diagnostic methods such as electrocardiographic stress testing. Studies from a number of PET (Positron Emission Tomography) centers note a very high sensitivity and specificity for PET in the diagnosis and evaluation of the severity of coronary artery disease.

PET is also accurate in determining myocardial viability. In patients with previous infarction, the determination of myocardial viability is important prior to revascularization. No other methods have been as accurate as PET in defining myocardial viability. It is estimated that 10 - 15% of patients undergoing revascularization may not benefit from the procedure. The economic impact of a method such as PET for identifying these patients is apparent.

DOE-sponsored research is also directed at the development and refinement of SPECT, similar in technology to PET, but one which is less expensive and can be readily available in most Nuclear Medicine departments. The importance and cost-effectiveness in the use of SPECT imaging is demonstrated by the patient who presents with chest pain and signs of a myocardial infarction, requiring hospitalization in the coronary care unit (CCU). The use of Technetium - 99m labeled isonitrile (which can be chelated within the laboratory of the Nuclear Medicine Department and is available for emergency care) with SPECT imaging is a valuable tool in the triage of the cardiac patient and determining the short and long term care of the patient.

SPECT imaging is also used predominantly in screening for myocardial perfusion with radiothallium. This procedure constitutes 25-30% of the Nuclear Medicine laboratory activities. Treadmill exercise is generally used to produce stress. However, pharmacologic intervention (the use of the drugs Persantine or Adenosine) is being used to produce simulated cardiac stress. Adenosine is available for use in the clinical setting. When the parenteral Persantine becomes routinely available, more studies will be performed on patients who are currently considered poor candidates for the treadmill.

CANCER PATIENT EVALUATION

The major emphasis of Nuclear Medicine in oncology has shifted from the therapeutic application of radioisotopes to the use of enhanced imaging modalities which allow earlier detection and improved staging of cancers. In addition, there is growing use of Nuclear Medicine in monitoring the therapy of cancer and early discovery of recurrent or metastasized cancers. This information allows the clinician to continue or modify treatment. Among the more serious problems in cancer chemotherapy are the side effects produced by anti - cancer agents. Such effects can often be more efficiently monitored through the use of Nuclear Medicine procedures. For example, certain cancer drugs can adversely affect the heart muscle. Nuclear Medicine methods provide a guide to therapy whereby the level of drug toxicity and the possible drug induced heart failure can be avoided.

Despite this progress, present technology cannot successfully identify very small growths and often cannot determine their nature. Therefore, these techniques need to be improved by development of more specific radioactive drugs, by exploration of more sophisticated immunologic and biochemical methodology and by development of instruments with enhanced spatial resolution (such as that offered by PET and SPECT).

Research with radiolabled monoclonal antibodies is an example of a promising new approach that is being pursued. Labeled monoclonal antibodies utilize the specificity of an antibody to a tumor as a way of localizing the dose. With the advent of monoclonal antibody technology, particular attention has been given to the therapeutic isotopes. Several radioisotopes have been identified for potential use in this area of nuclear medicine. As radiolabeled monoclonal antibodies for melanoma, colorectal cancer, prostate cancer and lung cancer become clinically available, they will be important in use as a therapeutic modality for inflammatory arthritis and skeletal cancer metastases. Therefore, as the level of investigation of the monoclonal antibody technology and radioisotope use escalates, the production of and access to these radioisotopes will have to be addressed.

NEUROLOGIC APPLICATION

The National Advisory Neurologic and Communicative Disorders and Stroke Council have deemed the 1990's as the Decade of the Brain.

A significant contribution of the DOE - sponsored research is the investigation of the chemistry and metabolic patterns of the brain and central nervous system. PET is the first imaging technique that illustrates the metabolic activity in the various regions of the brain.

PET studies have clearly provided important information in the clinical management of patients with seizure disorders who are refractory to anticonvulsant therapy. Invasive techniques such as the placement of subdural strip electrodes and stereotactically -placed depth electrodes are typically used to evaluate these patients. These invasive techniques are costly and involve risk. The benefit of PET is that it allows the evaluation of the patient without the need for invasive monitoring. The findings on the PET scan demonstrate good correlation with the pathologic findings.

PET scanning is also useful in several aspects of the management of patients with primary brain tumors. PET scans are the only studies able to distinguish recurrent tumor from necrosis as a result of radiation therapy. PET scans are also useful in the initial staging of the tumor and guiding appropriate therapy.

DOE - sponsored investigators are also using PET scans in the study of dementias, stroke, epilepsy and neuropsychiatric disorders. With its advanced specificity, PET improves the clinician's ability to differentiate in his diagnosis between Alzheimer's, multiple infarct dementia, Huntington's and Parkinson's, to separate these diseases from the normal aging process and to remove confounding issues of therapies applied to patients that are heterogenous mixtures of different diseases. In addition, PET imaging is not only able to determine abnormal blood flow patterns in the brains of Alzheimer's patients, but is also capable of detecting this debilitating disease in its earlier mild and moderate stages.

In addition, for neuro-SPECT imaging, lipophilic gamma-emitting agents have been developed which diffuse readily into the brain after intravenous injection. These lipophilic complexes reflect regional differences in cerebral blood flow. Therefore, cerebrovascular disease can accurately be diagnosed, as can other diseases that demonstrate alterations in regional cerebral blood flow, such as head trauma, dementias and seizure disorders, with the use of SPECT.

Other than brain tumor extent and viability, SPECT, qualitatively, is equal to PET. Both techniques have clinically comparable resolution. The most notable difference is the more accurate quantification available with the tomographic images in PET. The improvement of SPECT instrumentation and quantification would significantly increase SPECT's utility. This is a significant research opportunity which at present is underfunded.

INSTRUMENTATION AND FACILITIES NEEDS

Progress in Nuclear Medicine research and the eventual application of research results in the clinical setting is dependent upon the refinement of existing instrumentation, the development of new technology and the renovation and construction of DOE laboratory facilities. The potential application of PET technology in the diagnosis and treatment of disease requires further refinements in its ability to resolve small structures more discreetly. In addition, since PET studies require costly, on - site cyclotrons, additional research and development is needed to design smaller less costly models so that more patients can benefit from this exciting technology. DOE research funds could also be wisely invested in advancing the development of SPECT, which could be more readily available to Nuclear Medicine departments than PET, as well as the design and development of new radiopharmaceuticals for use in clinical Nuclear Medicine.

PROGRAMMATIC RECOMMENDATIONS

The development of Nuclear Medicine is contingent upon the production and availability of stable and radioactive isotopes. Funding for the upgrading of several radioisotope reactors and the establishment of one or more dedicated sites for the production of unique radioisotopes must be encouraged if we are to maintain our leadership in radioisotope production and development.

The most important radioisotope used clinically continues to be Technetium-99m because of its favorable nuclear characteristics, ready availability and low cost. The chemistry of Technetium-99m received particular attention during the last decade when several specific radiopharmaceuticals tagged with Technetium-99m became available. These include imaging agents for the heart, brain and other organs.

Of immediate interest is the current limitation on the supply of this critical radioisotope. At the present time, Technetium-99m is produced in a radioisotope generator system. The parent in this system, Molybdenum-99, is derived from the fission of Uranium-235 (HEU) in a nuclear reactor located in Chalk River, Ontario, Canada. It is supplied to all U. S. manufacturers of Technetium-99m generators by Nordion International, Inc. The sole domestic supply of Molybdenum-99 produced from the fission of Uranium-235 (HEU) has been interrupted indefinitely due to operational difficulties at the Tuxedo, New York site. More than 90% of all nuclear medicine diagnostic procedures in the U. S. are performed with Technetium-99m radiopharmaceuticals and there exists no backup for our Canadian supplier of this vital commodity. It is interesting to note that, when it existed, the domestic supply of this radioisotope originated in a reactor owned by a foreign corporation.

Though Technetium-99m will remain the most dominant radioisotope during the 1990's, other radionuclides will be needed for specific application, particularly as nuclear medicine technologies are further developed and enhanced. Increased access to Iodine-123 will be important. The network for production and distribution of this radioisotope in Europe has been much more successful than in the U. S. The TRIUMF (Tri-University Meson Facility in Canada, administered by Nordion International, Inc.) is producing high-purity Iodine-123. Iodine-123 is the ideal radioisotope for several procedures and, if made available routinely at low cost, it would be adopted for some very important radiopharmaceuticals. Investigators are reluctant to further explore the clinical uses of Iodine-123 since its availability is limited and the cost is often prohibitive.

The production and distribution of stable isotopes are also needed. The aging Calutrons at Oak Ridge National Laboratory are one of the two major stable isotope producers in the world with the other located in the Soviet Union. Government subsidization of the Soviet Calutrons have created unfair commercialization of stable isotopes throughout the world market.

CONCLUSION

The Society and College urge Congress, as well as the Department of Energy, to continue to expand its support of Nuclear Medicine research activities. The Administration's budget request is inadequate to sustain projected future yields.

The Society and College believe that in order to reverse the flat funding trend in the DOE's Nuclear Medicine research program over the past 10 years, a substantial and steady infusion of funds is necessary. Our recommendation for a 10% increase for the program in FY 1991 would serve as a first step in meeting this challenge.

We want to assure the Committee that the Nuclear Medicine community will continue to work closely with the Department of Energy in the development of its research programs and the identification of opportunities in diagnostic imaging and therapy. The exchange of views and knowledge between DOE officials and the medical community helps to assure that the greatest possible benefit is derived from the funds committed.

Mr. MYERS. You are a professor of radiology. Where are technicians who read mammograms trained and how are they trained?

Dr. COLEMAN. They are trained at the various institutions throughout the United States. Many institutions have programs in radiologic technology which encompasses mammographic techniques.

Mr. MYERS. Are there standards as to how they are trained?

Dr. COLEMAN. As far as radiologic technology, there are standards developed for that. There are no specific standards for mammography.

Mr. MYERS. I have, from personal experience, found that the technicians we need aren't available.

Dr. COLEMAN. A problem we are having in every aspect of medical care is the technologists, not only radiology in general, but mammography, a lot of these ancillary specialties——

Mr. MYERS. Women faithfully have their mammogram and think they are safe for another year. We might have a technician who doesn't know a thing about what he is doing read it and say it's okay. I would appreciate your views. Not right now, but at some other time.

Dr. COLEMAN. That is a problem we have.

Mr. MYERS. It sure is. Somebody isn't teaching.

Mr. BEVILL. Thank you very much.

TUESDAY, APRIL 3, 1990.

ATOMIC ENERGY DEFENSE ACTIVITIES

WITNESS

E.E. VAN BRUNT, JR., EXECUTIVE VICE PRESIDENT, CEGA

Mr. BEVILL. Mr. Van Brunt.

Mr. VAN BRUNT. I am Ed Van Brunt, Executive Vice President and Chief Operating Officer of CEGA Corporation. It is a jointly owned company of ABB Combustion Engineering and General Atomics. The corporation was established by CEG and for the purpose of providing the services required for the design, development, construction start up and operation for the DOE's modular high-temperature gas-cooled reactor program for the new production reactor.

I am very pleased to be here today representing CEGA at its first appearance before your committee to comment on the DOE budget for the NPR.

To summarize my statement, CEGA fully supports the objectives and basic approach of the DOE NPR program and the funding level requested for this program by DOE. We believe that this level of funding will provide the technical and programmatic input necessary to determine the final choice of reactors and sites on a timely basis. That is the record of the decision.

In late November of last year CEGA and its subcontractors, Stone and Webster Corporation and Burns and Roe Company received a prime contractor from DOE covering the conceptual design of the MHTGR-NPR with options covering Title I preliminary design, Title II final design and certain aspects of Title III construction activity. Certain developmental and demonstration activities related to the nuclear fuel has been contacted for by the DOE directly with General Atomics.

I am pleased to report to the committee that since formally starting operations last fall, we have been able to mold CEGA into an organization exemplified by the fact that today we have met all milestones defined for the conceptual activity. We are very pleased with the NPR program and with the opportunity to work on this essential project.

We are confident that the MHTGR technology and sources available to CEGA that we can provide a DOE, provide to DOE a reliable production reactor within 10 years which supports DOE's objective. Beyond that we believe the MHTGR and NPR offers unique benefits. First, as recognized by the ERAB the safety characteristics of the system offer opportunity for significant advancement in safety over current commercial systems.

Second, the MHTGR-NPR has the capability to cogenerate tritium and energy for the production of electric power. The potential revenues to the government from the sale of energy could significantly reduce the overall life cycle cost of this nuclear material production system.

Third, because of its modularity, MHTGR-NPR is best matched to effectively meet changing material requirements while assuring economic benefit from the investment. With modules the flexibility is available to change the deployment rate of planned capacity with minimum cost impact. Should material demands fall dramatically, the units can continue to be operated and generate revenues from energy sales while maintaining the capability to return to materials production on short notice.

Finally, proceeding with the MHTGR-NPR based on the civilian technology will establish the technology and infrastructure necessary to support the commercial deployment of an advanced second generation passively safe MHTGR power reactor design.

In conclusion, CEGA and its subcontractors fully support the preferred program strategy which incorporates multiple reactors, multiple sites and diverse technologies which reduces the uncertainty that new production capacity will be on line at an early date.

The risk of loss of total production capability is a result of technical issues, reactor specific safety issues, sight related events, including institutional or regulatory actions, natural phenomena is minimized.

Multiple reactors also provide increased operating flexibility. Therefore, we recommend that the committee support the departments' request.

That completes my formal statement, Mr. Chairman.

Mr. Bevill. Thank you, sir.

[The statement of Mr. Von Brunt follows:]

STATEMENT OF

MR. EDWIN E. VAN BRUNT, JR.
EXECUTIVE VICE PRESIDENT
and
CHIEF OPERATING OFFICER OF

CEGA CORPORATION

BEFORE THE

ENERGY AND WATER DEVELOPMENT SUBCOMMITTEE

OF THE

HOUSE COMMITTEE ON APPROPRIATIONS

ON

FY91 DEPARTMENT OF ENERGY APPROPRIATION

APRIL 3, 1990

Mr. Chairman and Committee Members, I am Edwin Van Brunt, Executive Vice President and Chief Operating Officer of CEGA Corporation (CEGA), a jointly owned company of ABB Combustion Engineering Nuclear Power (CE) and General Atomics (GA). I am very pleased to be here today representing CEGA at its first appearance before your Committee to comment on the Department of Energy (DOE) budget for the New Production Reactor (NPR) Program. To summarize my statement, CEGA fully supports the objectives and basic approach of the DOE NPR program and recommends that the Committee support the FY91 budget for that program at the level of $363 million as requested by the Department. We believe that this level of funding is required to provide technical and programmatic input necessary to designating the final choice of reactors and sites (i.e., Record of Decision) on a timely basis and to maintain the overall schedule objectives of the program.

Before presenting our basis for our recommendations, I would like to tell the Committee something about CEGA and its role in the DOE's New Production Reactor (NPR) Program and to make some general comments on the program.

The CEGA Corporation was established by CE and GA for the purpose of providing the services required for the design, development, construction, start-up, and operation for the DOE's Modular High Temperature Gas-Cooled Reactor (MHTGR) NPR program. To enhance the capability of CEGA, it has engaged as principal subcontractors and as fully integrated team members, Stone and Webster Engineering Corporation (SWEC) and Burns and Roe Company (BRC). CEGA, in combining the capabilities and resources of these four organizations, is uniquely qualified to provide the breadth of services required for the NPR project. GA has unparalleled experience in the design, technology and supply of HTGR nuclear systems, fuel, and the special tritium technologies required for an NPR. CE has an outstanding performance record in project management, design, systems, engineering and the supply of nuclear steam supply systems and fuel. The two architect-engineering organizations (SWEC and BRC) have designed and/or constructed twenty-three nuclear plants and provided engineering services to over 100 operating nuclear plants. The technical staff for CEGA has been selected from the four team members. I represent an exception in that I was brought into the CEGA organization from outside because of my background as Executive Vice President of Arizona Public Service Company, responsible for the design, construction and start-up of the three-unit Palo Verde Nuclear Generating Station.

CEGA is organized to perform as a single entity prime contractor providing overall technical and project management for all aspects of the MHTGR-NPR project. In late November of last year, CEGA received a prime contract from the DOE covering the conceptual design of the MHTGR nuclear materials production plant with options covering Title I (preliminary) design, Title II (final) design, and certain aspects of the Title III construction activity. Certain developmental and demonstration activities relating to the tritium targets and nuclear fuel have been contracted for by the DOE directly with GA and other organizations. I am pleased to report to the Committee that since formally starting operations last fall we have been able to mold CEGA into an effective organization which is exemplified by the fact that to date we have met all of the milestones which have been defined for the aggressive conceptual design activity. The conceptual design phase of the MHTGR-NPR contract will be completed in April of this year. Title I design is currently scheduled to be initiated in May of this year.

I would like to mention one specific activity which is being undertaken as part of the conceptual design phase, namely the development of an engineering and construction schedule. At the time of the initial announcement by the DOE of the recommendation to include the construction of the four module MHTGR facility at the Idaho National Engineering Laboratory as a part of its NPR program, it was indicated that the schedule for having the full capacity in place was sixteen years. This led to the mistaken impression that the extended schedule was dictated by design, development and/or construction constraints of the MHTGR. In fact, the key determinant in the extended schedule was the arbitrary assumption that manufacturing or construction activities on units 2, 3, and 4 would not be initiated until after the initial unit had completed an extensive performance and reliability program. As a part of the conceptual design activity, a schedule has been prepared which allows long lead procurement and the start of the sequential construction of modules 2 through 4 before the completion of the test program for the lead reactor module. The schedule provides full tritium production from the four module MHTGR-NPR facility within ten years which supports the DOE's objective. This uninterrupted sequential construction would also substantially improve project cost effectiveness.

A second activity that I would like to report on because of its importance to the program is the target technology work which is being performed by GA under direct contract to the DOE. The initial target work which was performed by GA and Idaho Nuclear Engineering Laboratory (INEL) was fully successful and served as the basis for the positive technology assessment by the Energy Research Advisory Board (ERAB) to the DOE. The work was, however, on a laboratory or bench scale. The near term objective of the current program is to verify the earlier results but on full size prototypical targets manufactured on full scale production equipment. Although there were some initial delays, the program is now going very well. Production target particles have been produced and successfully irradiated in the Advanced Test Reactor at INEL and a full scale prototypical target element assembly has recently been inserted into the same reactor where it will undergo a proof test. The achievements of this program provide a continued high level of confidence that the MHTGR-NPR will meet or exceed all of the DOE's production requirements.

We at CEGA are very pleased with the program and with the opportunity to work on an essential project with an essential mission. We are confident that with the MHTGR technology and the resources available to CEGA, including the work being done at the National Laboratories, we can provide to the Department a reliable production reactor system on an urgent schedule. Beyond that we believe the MHTGR-NPR offers some unique benefits to the nation.

First, as was recognized by ERAB, the safety characteristics of the system offer the opportunity for a significant advancement in safety over current commercial systems.

Second, as this Committee knows, the MHTGR-NPR has the capability to cogenerate tritium and energy for the production of electric power. The revenues to government from the sale of energy which can range from $5 billion to $14 billion over the life of the project. This means that the MHTGR-NPR will have a lower life cycle cost than any of the other nuclear material production systems.

Third, the MHTGR, because of its modularity and its power generation capability, is best matched to effectively meeting changing materials requirements and assuring an economic benefit from the investment. With the recent events in Eastern Europe, this has become a feature of some importance. With modules, the flexibility is available to change the deployment rate or change plant capacity with minimum cost impact. Should materials demands fall dramatically, the units still can continue to be operated and generate revenues from energy sales while maintaining the capability to return to materials production on short notice.

Finally, proceeding with the MHTGR-NPR will substantially establish the technology and infrastructure to allow the commercial deployment on an advanced second-generation, passively safe power reactor.

I would also like to comment upon the relationship between the DOE's civilian MHTGR program which is managed by the Office of Nuclear Energy (NE) and the MHTGR-NPR program. As this committee is aware, the NPR reactor design has been taken directly from the NE design with only those modifications made which were required to accommodate the NPR product and schedule needs. These modifications included substitution of a high enriched uranium core which can accommodate tritium targets for the low enriched civilian core; the use of a state-of-the-art oil lubricated bearing rather than a magnetic bearing for the helium circulator, and the addition of a containment structure.

The commonality of design has been a major benefit to the NPR activity allowing it to draw heavily from the well advanced civilian design and to move forward rapidly. However, the urgency of the NPR program places the NPR version of the reactor on a schedule which is in advance of any potential civilian initiative. For that reason, the Department has established the MHTGR-NPR as the lead program responsible not only for NPR specific activities, but also all aspects of the HTGR activity which are common to both programs. The NE program will manage and fund those activities which are specific to the civilian program. Thus in the future the technology transfer will be from the NPR program to the NE program. The benefits from NPR technology and code development, systems and component design, and performance verification and demonstration, can be substantial. We have urged that these benefits be optimized by maintaining commonality between the designs to the largest extent possible without compromising the primary objectives and specific requirements of the NPR program.

As I stated earlier, CEGA fully supports the preferred DOE NPR program strategy which incorporates multiple reactors, multiple sites, and diverse technologies. The parallel Heavy Water Reactor and MHTGR approach not only reduces the uncertainty that new production capacity will be on line at an early date, but also provides for the highest level of product assurance. The risk of loss of total production capability as a result of technical problems or specific safety issues is reduced. Also reduced is the potential negative effect on product output from site related events including institutional or regulatory actions, natural phenomena, or aggressor acts. Multiple reactors also provide increased operating flexibility.

For a major program such as the NPR which has specific schedule requirements, significant cost impact, and national security implications, it is important that the budget provide for the early input to the Department of information necessary for it to make a sound assessment of its options prior to the issuance of the formal Record of Decision. It is also important that the budget permit a pace of technology confirmation, design, and regulatory and review activity such that the long term schedule goals can also be achieved. We believe the funding level of $363 million requested by the Department for the NPR program in FY'91 allows these objectives to be met and we recommend that the Committee support the Department's request.

That completes my formal statement, Mr. Chairman, but I would again like to express my appreciation at the opportunity to appear before you today. I would be pleased to answer any questions that you may have at this time.

TUESDAY, APRIL 3, 1990.

DOE NUCLEAR WEAPONS PRODUCTION FACILITIES

WITNESS

DAVID LEWIS, LEGISLATIVE DIRECTOR, PHYSICIANS FOR SOCIAL RESPONSIBILITY

Mr. **BEVILL.** Next we have Mr. David Lewis.

Mr. **LEWIS.** Physicians for Social Responsibility, a 30,000 member national organization, was established in 1961 to establish greater public awareness and medical community awareness about the threat of nuclear war.

I was here last year before the subcommittee to tell you that the secrecy and the conflict of interest that had been growing in the nuclear weapons complex DOE operates was sacrificing the health and environment of Americans in the name of protecting the United States.

The situation unfortunately still exists. We wish to thank the subcommittee and especially Chairman Bevill for his work last year to increase clean up funding around weapons facilities last year.

Our organization is continuing a detailed investigation of health risks posed by these facilities.

We observed important changes in the last year in the rhetoric of the Energy Secretary but we are dismayed that DOE budget request this year proposes business as usual for the complex. It doesn't support the Secretary's avowed new culture that claims to place environment and safety above production. We recommend several changes the subcommittee should make to the DOE's budget.

First, in nuclear weapon production because the military threat to the U.S. has declined, long hidden environmental contamination is beginning to be known. We ask the subcommittee to reduce the DOE's budget request for atomic energy defense activities by approximately $2 billion. I know that is a lot. This means stop producing additional nuclear warheads and highly toxic materials we do not need for our defense. I have outlined in my written testimony the facilities we suggest you cut.

Second, because the projected cost of clean up around these facilities and environmental compliance is continuing to climb, you should fund at a very minimum the clean up priorities that DOE established in their five-year plan.

Their own budget submission to you has a severe shortfall from that plan. Clean up is a misleading term for this work. It will be the dirtiest job in history. It will get more expensive and dangerous if you don't accelerate the pace. Early investment to stabilize those sites that directly threaten people can reduce the risks and keep the clean up cost lower.

Third is the area of health research. The DOE program has been underfunded for years and was just examined by Secretary Watkins own appointed panel of health experts. They recommended a major overhaul and expansion of health research to determine the effects of exposure to hazardous structures at DOE weapons sites for worker and the surrounding populations. We agree with their recommendations that funds to strengthen and broaden epidemiological research and health funding should be increased by $15 million over the proposed 1991 budget.

An example of the study we are talking about is in Colorado. It is an independent study of chemical and radiological doses received by the population surrounding the Rocky Flats Plant in Denver. That population includes many of the workers at the facility.

A companion study will establish the health risk to that population from the plant. The first part of this research will require $7 million from DOE over the next two years. We request your strong support for funding this model study and others like it. It is time to return to its proper emphasis which this subcommittee has supported over the years which is assuring our nation's energy future.

In recent years atomic defense activities exceeded 60 percent of DOE's total budget. This misplacement of resources poses a very real threat to our national security. You should begin to shift DOE resources away from weapons production back into the accelerated R&D for renewable energy and energy conservation technologies.

In conclusion, the guiding maxim of facilities who I work for is first do no harm. We believe DOE must not be allowed to construct thousands of unnecessary nuclear warheads under conditions that threaten workers and public health and safety while environmental contamination of previous and current production goes unaddressed.

Congress must take steps now to accelerate the clean up made necessary by our own government's actions. This subcommittee can help correct DOE's misplaced priorities by eliminating funds for new weapons production facilities funding fully all identified high priority environmental restoration at DOE sites and investing in robust health research to define more precisely the health risk of nuclear weapons production.

We and many other citizens organizations stand ready to work with you and with Congress to achieve this agenda.

Thank you.

[The statement of Mr. Lewis follows:]

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PHYSICIANS
FOR SOCIAL
RESPONSIBILITY

The U.S. Affiliate of International
Physicians for the Prevention of Nuclear War
Recipient of the 1985 NOBEL PEACE PRIZE

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TESTIMONY BEFORE THE HOUSE OF REPRESENTATIVES APPROPRIATIONS SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

APRIL 3, 1990

DAVID LEWIS
DIRECTOR FOR POLICY AND LEGISLATION

Physicians for Social Responsibility (PSR) is a national organization of health professionals and citizens, founded in 1961 to educate the medical community and the general public about the threat of nuclear war. PSR is the U.S. affiliate of the International Physicians for the Prevention of Nuclear War, which was awarded the Nobel Peace Prize in 1985.

Last year we appeared before this subcommittee to decry the secrecy and conflict of interest in the nuclear weapons complex that was sacrificing Americans' health and environment in the name of protecting us. We wish to thank the subcommittee and especially Chairman Bevill for working to increase cleanup funding around the complex last year. Our organization has spent the past year in detailed investigation of DOE's troubled facilities and the health risks they pose. We have observed the important changes in rhetoric and style initiated by Energy Secretary James Watkins, but are dismayed that DOE's Fiscal Year 1991 budget request proposes business as usual for nuclear weapons production. The budget does not support the Secretary's avowed "new culture" that claims to place environment and safety above production. We strongly urge the subcommittee to make these fundamental changes:

Summary of Recommendations

1) The subcommittee should reduce the DOE's FY 1991 budget request for Atomic Energy Defense Activities by approximately $2 billion. These reductions should be drawn from Nuclear Materials Production, New Production Reactors, Nuclear Weapons Production and Weapons Research Development and Testing.

2) The subcommittee should fully fund the Five-Year Plan for weapons facilities cleanup, which the DOE's budget request does not. Remedial action and risk containment must be accelerated at sites where known contamination poses environmental and human health threats.

3) The subcommittee should fully fund all recommendations of the Secretarial Panel for the Evaluation of Epidemiologic Research Activities, which Secretary Watkins has promised to implement. This will require an increase of at least $15 million over the proposed FY 1991 budget. The subcommittee should also fully fund all health-related activities in state-DOE agreements.

4) The subcommittee should shift DOE resources away from weapons production into accelerated research and development of renewable energy and energy conservation technologies.

1. NUCLEAR WEAPONS PRODUCTION

Congress has received extensive testimony over the last two years acknowledging a significantly diminished military threat to the United States. The extensive nuclear weapons modernization programs of the 1980s have perpetuated a massive arsenal, swollen far beyond what is required for deterrence. The START treaty may not force very deep reductions, though many experts now support much smaller arsenals as a "minimum deterrent."

There is no shortage of lethal nuclear weapons materials or sophisticated warhead technology. Since 1945, the U.S. has produced more than 100,000 kilograms of plutonium, fabricated more than 60,000 nuclear weapons and test-exploded more than 900. Through malfeasance and neglect, the ventilation ducts at the Rocky Flats Plant alone have accumulated 62 pounds of plutonium, enough to make six bombs.

Not just in the United States, but around the world, nuclear weapons production, cloaked in secrecy for more than 45 years, has wrought untold damage to the environment, workers and the public. The legacies of this arms race are hazardous and unsafe facilities scattered around the planet, and a mounting bill for what is euphemistically called "cleanup." In fact, this "cleanup" will require the development of new, sophisticated technologies to contain and monitor radioactive and toxic wastes, some of which will remain dangerous for thousands of years.

These global realities and new domestic priorities demand significant reductions in weapons production activities, yet the Administration proposes extensive new production facilities. The DOE Atomic Energy Defense Activities budget request for FY 1991 is $8.506 billion. We propose that the subcommittee make reductions totaling at least $1.924 billion in weapons production and testing:

* Eliminate all activities related to the continued production of plutonium and weapon-grade uranium for nuclear weapons.

* Defer restart of Savannah River Plant reactors, cancel the second New Production Reactor (NPR) and defer the remaining NPR construction budget.

* Cancel the proposed Plutonium Recovery Modification Project at the Rocky Flats Plant.

* Eliminate uranium recovery operations at the Idaho National Engineering Laboratory.

* Eliminate research and development activities at the Lawrence Livermore National Laboratory relating to the plutonium Special Isotope Separation project, and eliminate the Nuclear Directed Energy Weapons budget.

* Cut the budgets for weapons testing and new weapons development by at least 50 percent this year, as a step towards a complete halt in these activities. Also cut the budgets for war reserve new production and process development by at least 50 percent this year, as a step towards a complete halt in these activities.

* Add at least $26 million to the Verification and Control Technology budget.

2. FACILITIES CLEANUP

The estimated cost of cleanup and environmental compliance at DOE nuclear weapons facilities continues to climb. In July 1988, the General Accounting Office estimated at least $130 billion would be needed for this task. We believe this estimated price tag is low. Additional sites will be discovered, complex site characterization studies alone could cost millions more than currently expected, and cleanup technologies have not even been developed for some radioactive contamination problems. DOE's Environmental Restoration and Waste Management Five-Year Plan, issued last August, sets funding levels for identified cleanup projects that are woefully insufficient to achieve stated DOE priorities.

A review of DOE's FY 1991 budget by the Natural Resources Defense Council and other analysts, reveals that DOE has underestimated the total cost of cleaning up the nuclear weapons complex, and has failed to request adequate funds to meet environmental needs established by its own plans. By changing accounting procedures, DOE's budget shows an apparent increase in environmental funding, but not actual new funding commitments. Environmental projects that support ongoing weapons production activities are favored in this budget, while waste site cleanup, interim remedies, and EPA and state oversight are underfunded.

To correct these deficiencies, we believe the subcommittee should give careful scrutiny to DOE's shifting of activities into environmental categories, and provide the following firm directions:

* _The subcommittee should provide at least an additional $600 million to fund DOE's Five-Year Plan._ The Five-Year Plan has severe shortcomings -- it may significantly understate project costs and funds cleanup at a very slow rate (cleanup of the Hanford site would take 250 years to complete at the current Five-Year Plan rate). Additional priority cleanup problems have been identified since the Five-Year Plan was drafted, and more will certainly be discovered. But this plan represents a set of minimal environmental requirements that must be fully funded. DOE's budget falls short of funding even these activities by more than $600 million for defense facilities and by an additional $50 million for DOE civilian facilities.

* _The subcommittee should direct DOE to assess and use all cost-effective interim remedies._ Early investment to stabilize dangerous sites and to halt or slow the spread of contamination can reduce risks and prevent cleanup costs from soaring. Interim remedies should not be used as a substitute for, nor be allowed to interfere with, the implementation of permanent remedies. And full public participation and comment must be included in all decision-making processes.

* The subcommittee should also direct DOE to update annually its estimate of overall cleanup costs, and to state the assumptions used in developing these estimates.

3. HEALTH RESEARCH

The Secretarial Panel for the Evaluation of Epidemiologic Research Activities (SPEERA), has just completed its work and delivered a report to Secretary Watkins. The Secretary has issued six directives to begin implementing these recommendations, but funding will be needed to establish a comprehensive research program that can identify risks and protect the health of workers and the public around nuclear weapons facilities.

3 a. Workers at these sites face extremely hazardous conditions and direct health risks from toxic and radioactive substances. They require much more rigorous health surveillance to discover patterns of disease occurence, so that injury may be prevented. To make this work a top priority, the federal government's epidemiology program needs funding to strengthen program management, increase skilled personnel and improve data collection. SPEERA estimates this new effort will require funds for a professional staff of 12 to 16 and funds to support day-to-day surveillance of employees, data collection, and hazard analyses.

> **The "descriptive" epidemiology program under a DOE Assistant Secretary for Occupational and Environmental Health and Safety requires at least $4.0 million over the proposed FY 1991 budget to take the basic steps that can protect DOE workers.**

3 b. A much larger analytical epidemiology program is necessary to determine the longer-term risks of exposure to hazardous substances at DOE sites, both for workers and the surrounding populations. As SPEERA recommended, this work should be managed by an agency independent of weapons production and funded by DOE at significantly higher levels, so that current work may be expanded and new areas of research developed.

> **Funds to strengthen and broaden epidemiologic research should be increased by at least $11.0 million over the proposed FY 1991 budget.**

3 c. Almost no independent research has been conducted on the health risks that nuclear weapons facilities pose to the public. Such studies are complex and time consuming, but credible research in this area is essential for an assessment of the true cost of producing nuclear weapons. We wish to highlight one model study which needs this subcommittee's strong financial backing, and underscore that additional studies must be designed and funded to help determine how and where nuclear weapons production is poisoning the citizens it was intended to protect.

The State of Colorado and DOE signed an Agreement in Principle in June, 1989. This Agreement provides for a five-year program of health studies, to which DOE pledged at least $1.8 million in annual support and sufficient additional funds to complete independent contracted studies. In accordance with the agreement, a contractor is being selected for an independent study of chemical and radiological doses received by the population surrounding the Rocky

Flats Plant in metropolitan Denver. A companion study will then establish the health risks to that population from the plant. The first part of this research will require at least $7 million from DOE over the next two years.

> **The subcommittee should fully fund health studies contracted under the DOE-State of Colorado Agreement in Principle, and support an expanded program of similar population studies surrounding nuclear weapons production facilities.**

4. RENEWABLE ENERGY RESEARCH

Over the last decade, the Pentagon has effectively made the Department of Energy a wholly-owned subsidiary. It is time to reverse that trend, and return DOE to its proper emphasis -- assuring our nation's energy future. This will require a reinvestment of resources into research that can develop technologies for renewable energy sources, the kind that can provide for America's energy needs in a sustainable way without destroying the environment we depend upon. We also require research into energy conservation technologies that can help us make the most of the resources we do consume.

In recent years, Atomic Defense Activities have exceeded 60 percent of DOE's total budget. This unconscionable misplacement of resources poses a very real threat to our national security.

> **The subcommittee should shift DOE resources away from weapons production into accelerated research and development of renewable energy and energy conservation technologies.**

CONCLUSIONS

The guiding maxim of physicians is "First, do no harm." PSR believes that DOE must not be allowed to construct thousands of unnecessary nuclear warheads, under conditions that threaten worker and public health and safety, while environmental contamination from previous production goes unaddressed. Congress must take steps now to assure that this so-called "cleanup," made necessary by our own government's actions, proceeds at a resonable pace. This subcommittee can help correct the misplaced priorities of the past by eliminating funding for new weapons production facilities, funding fully all identified, high-priority environmental restoration at DOE sites, and investing in robust health research to define more precisely the health risks of nuclear weapons production.

PSR and many other citizens' organizations stand ready to work with you and the Congress to achieve this agenda. We thank the subcommittee for considering our recommendations.

TUESDAY, APRIL 3, 1990.

DOE NUCLEAR WEAPONS PRODUCTION FACILITIES

WITNESS

STEPHEN I. SCHWARTZ, LEGISLATIVE COORDINATOR, NUCLEAR CAMPAIGNS, GREENPEACE

Mr. BEVILL. Mr. Schwartz.

Mr. SCHWARTZ. My name is Stephen Schwartz. I am the legislative coordinator for Greenpeace USA. I testify on behalf of the 1.7 million supporters of our organization. I would like to note we have 4 million supporters worldwide.

Today the DOE is unable to produce new raw materials—plutonium and tritium—for the U.S. nuclear arsenal. Fabrication of plutonium triggers at the Rocky Flats Plant has stopped. Within a short period of time, warhead production at Pantex will cease completely.

On March 5, Secretary of Energy James Watkins, sitting in this very room, testified that the shutdown at Rocky Flats would prevent DOE from meeting its requirements under the Nuclear Weapons Stockpile Memorandum. This is the first time since the end of World War II that warhead production will completely halt due to systemic health, safety and environmental problems at the nuclear complex.

Here are several suggestions on how to deal with this unprecedented situation:

First, DOE and DOD must stop using the Nuclear Weapons Stockpile Memorandum as a nuclear wish list.

The Administration is asking for funds this year for three new tactical nuclear systems for fighting a nuclear war in Europe—the Follow-on-to-Lance, the SRAM-T, and the W82 warhead for the 155 millimeter artillery shell.

The West Germans and others within NATO have understandably derided these proposals but, recent reports in the press notwithstanding, their development continues. We estimate that if these weapons are canceled more than $2 billion could be saved over the next several years.

Second, canceling or reducing strategic systems will also impact estimated future warhead production needs. Reducing the planned buy of 132 B-2 bombers to 30 or even 15 will drastically reduce the numbers of SRAM-II and B83 bombs scheduled to be purchased, creating potential savings of over $2 billion.

It is time for a thorough reordering of the DOE's priorities. It is no longer justifiable, on any grounds, to continue nuclear warhead production.

When most of the DOE's production plants are unable to meet the standards applied to commercial nuclear facilities, when there are rampant violations of state and federal environmental law across the complex, we must ask what possible threat justifies their continued unsafe operation. And despite Secretary Watkins' efforts, extremely dangerous problems and practices continue to surface.

Here, then are eight steps that you can take to help DOE restructure the production complex in the 1990's.

One, don't treat the current shutdown as a crisis because it impedes further warhead production. The Savannah River reactors have been shut for nearly two years, yet in that time not one inch of soil has been lost to Soviet aggression. Use this time, instead, to review actual stockpile needs and assess whether the 13 separate systems currently in development, with six scheduled for full production in fiscal year 1991, are really necessary.

Two, build a system of checks and balances into the Nuclear Weapons Council to ensure that DOE is not merely filling warhead orders for the Department of Defense. The Armed Services are used to getting a free ride from DOE since they bear none of the costs.

Three, stop production this fiscal year of six nuclear bombs and warheads currently in Phase 6 production. The W82 is politically undeployable in Europe. If that weren't enough a recent military assessment on NATO Pact forces in Europe makes the W82 indefensible on military grounds. The DOE produced approximately 400 W88/Trident II warheads, 192 of which went into operation aboard the U.S.S. Tennessee. There are over 3100 Trident I warheads deployed on Poseidon and Trident submarines. We urge you to cancel the W88/Trident II and ask the Navy to make do with the W76/Trident I warhead, which it is currently planning to load on approximately half of the Trident II missiles.

Four, cancel the next generation of nuclear war-fighting weapons, specifically the B90 Nuclear Depth/Strike Bomb, the Earth Penetrating Warhead, SRAM-II, and developmental high-power microwave weapons.

Five, don't permit the DOD to exploit loopholes in a START agreement by building thousands of air delivered nuclear bombs and warheads that are not accountable under the agreed upon rules. Such actions contravene the purpose of arms control and will needlessly stain the already crippled bomb factories.

Six, reorient DOE funds away from weapons production and toward time critical cleanup activities and basic energy research and development. It is contradictory to call for real decreases in the defense budget and at the same time accelerate nuclear warhead production. The current budget allows severe contamination problems to continue unabated and needlessly angers state officials and local residents.

Seven, Halt DOE's planned resumption of uranium metal production at the Oak Ridge Y-12 Plant.

Eight, In recognition of the significant easing of international tensions and of other pressing budgetary needs, defer all funds requested for fiscal year 1991——

Mrs. BOGGS [presiding]. Will you please wrap up? We wish to hear what you have to say, but your time has expired.

Mr. SCHWARTZ. Time has come to recognize that further production of of nuclear weapons is doing more to hurt the people in this country than to help them. And despite a recent statement by Vice Admiral Roger Bacon, Commander of the Atlantic submarine fleet, that Trident submarines and missiles will act, "as a defense against terrorism, drug trading and other global conflicts," the fact is that no one feels threatened by our nuclear weapons except, ironically, those people who work in or live near the DOE factories that created and perpetuate the arsenal.

Mrs. BOGGS. Thank you very much for your testimony.

[The statement of Mr. Schwartz follows:]

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STATEMENT OF

STEPHEN I. SCHWARTZ

LEGISLATIVE COORDINATOR, NUCLEAR CAMPAIGNS

GREENPEACE, U.S.A.

BEFORE THE SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
OF THE COMMITTEE ON APPROPRIATIONS
UNITED STATES HOUSE OF REPRESENTATIVES

REGARDING

THE DEPARTMENT OF ENERGY'S FISCAL YEAR 1991 BUDGET REQUEST

APRIL 3, 1990

RECYCLED PAPER

SUMMARY

It is time for a thorough reordering of the Department of Energy's budgetary priorities. Here are 8 steps that this subcommittee and Congress can take to help DOE restructure the nuclear weapons production complex in the 1990's:

1. Don't treat the current shutdown as a crisis because it impedes further warhead production.

2. Build a system of checks and balances into the Nuclear Weapons Council to ensure that DOE is not merely filling warhead orders for the Department of Defense.

3. Stop production this fiscal year of 6 nuclear bombs and warheads currently in Phase 6:

   o the B61
   o the B83
   o the W82 Artillery Fired Atomic Projectile (AFAP)
   o the W-80-0 and W-80-1 warheads for the sea and air-launched cruise missile
   o the W88/Trident II

4. Cancel the next generation of nuclear war-fighting weapons, specifically:

   o the B90 Nuclear Depth/Strike Bomb
   o the Earth Penetrating Warhead (EPW)
   o the SRAM-II
   o developmental high-power microwave weapons

5. Don't permit the DOD to exploit loopholes in a START agreement by building thousands of air delivered bombs and warheads that are not accountable under the agreed upon rules.

6. Reorient DOE funds away from weapons production and toward time critical cleanup activities and basic energy research and development.

7. Halt DOE's planned resumption of highly enriched uranium metal production at the Oak Ridge Y-12 Plant.

8. Defer all funds requested in FY 1991 for construction of new weapons facilities including new production reactors, materials processing facilities, and research and development projects.

Good afternoon and thank you, Mr. Chairman, for the opportunity to testify today before this subcommittee. My name is Stephen Schwartz and I am the Legislative Coordinator for Nuclear Campaigns with Greenpeace U.S.A. I testify today on behalf of the 1.7 million supporters of Greenpeace U.S.A. Greenpeace is also an international organization with offices in 22 countries, a newly-opened office in Moscow, and 4 million supporters worldwide.

This afternoon I would like to discuss the Department of Energy's (DOE) ailing nuclear weapons production complex and what this subcommittee, and Congress as a whole, can do to reverse a rapidly deteriorating situation.

As we sit here today, the DOE is unable to produce new raw materials -- plutonium and tritium -- for the U.S. nuclear arsenal. Fabrication of plutonium triggers at the Rocky Flats Plant has stopped. Within a short period of time, warhead production at Pantex will cease completely.

On March 5 Secretary of Energy James Watkins, sitting in this very room, testified that the shutdown at Rocky Flats would prevent DOE from meeting its requirements under the Nuclear Weapons Stockpile Memorandum. While it is routine for DOE to fail to meet its inflated production goals, this is the first time since the end of World War II that warhead production will completely halt due to systemic health, safety and environmental problems at the nuclear weapons complex.

Here are several suggestions on how to deal with this unprecedented situation.

First, DOE and DOD must stop using the Nuclear Weapons Stockpile Memorandum as a nuclear wish list. The dramatic changes in Eastern Europe and the Soviet Union require a comprehensive review of present and future defense needs.

For example, the Administration is asking for funds this year for three new tactical nuclear systems for fighting a nuclear war in Europe -- the Follow-on-to-Lance, the SRAM-T, and the W82 warhead for the 155 millimeter artillery shell. The West Germans and others within NATO have understandably derided these proposals but, recent reports in the press notwithstanding, their development continues. We estimate that if these weapons are canceled more than $2 billion could be saved over the next several years.

Second, canceling or reducing strategic systems will also impact estimated future warhead production needs. Reducing the planned buy of 132 B-2 bombers to 30 or even 15 will drastically reduce the numbers of SRAM-II (entering pre-production in FY 1991) and B83 bombs (in full production at about 200 per year) scheduled to be purchased, creating potential savings of over $2 billion dollars. This would further relieve the stress and strain on the production complex.

Third, Congress must review DOE's increasingly expensive modernization plans. At Rocky Flats DOE is proposing to spend, at latest estimate, between $500 and $600 million to build a new plutonium recycling facility as part of the Plutonium Recovery and Modification Project (PRMP). At the same time it has proposed phasing out operations at the plant. Despite a recent National Academy of Sciences report which found that, "The current supply of plutonium and the current capacity to process both virgin and recycled plutonium from retired weapons or scrap are adequate to meet the demand for maintaining a stockpile similar to the current one," DOE plans to build PRMP to process even more plutonium.

It is time for a thorough reordering of the DOE's priorities. It is no longer justifiable, on any grounds, to continue nuclear warhead production.

When most of the DOE's production plants are unable to meet the standards applied to commercial nuclear facilities, when there are rampant violations of state and federal environmental laws across the complex, we must ask what possible threat justifies their continued unsafe operation. And despite Secretary Watkins' efforts, extremely dangerous problems and practices continue to surface, including the revelation last week that some 62 pounds of plutonium, or roughly 15 bombs' worth, is stuck in air ducts at Rocky Flats because, we are told, workers blatantly disregarded the rules and punched holes in clogged air filters to allow the production line to keep moving.

Here, then, are 8 steps that you can take to help DOE restructure the production complex in the 1990's:

1. **Don't treat the current shutdown as a crisis because it impedes further warhead production.** The Savannah River reactors have been shut for nearly 2 years, yet in that time not one inch of soil has been lost to Soviet aggression. Use this time, instead, to review actual stockpile needs and assess whether the 13 separate systems currently in development, with 6 scheduled for full production in FY 1991, are really necessary.

Fiscal reality and continuing production problems dictate that despite planned weapons modernization programs the arsenal will continue to shrink throughout the decade as more warheads are retired than are built. In fact, since 1967 the United States has unilaterally reduced its arsenal by over 11,000 weapons. Stopping the production of new weapons is not the same as unilaterally disarming.

2. **Build a system of checks and balances into the Nuclear Weapons Council to ensure that DOE is not merely filling warhead orders for the Department of Defense.** The armed services are used to getting a free ride from DOE since they bear none of the costs

of warhead production. Indeed, despite retiring most of its tactical nuclear weapons, the Navy plans on buying the B90 Nuclear Depth/Strike Bomb because, as a Navy official told one of our researchers, it's free. DOE has a responsibility to its workers and the general public to halt weapons activities or prevent their resumption when such activities present health, safety or environmental dangers.

3. **Stop production this fiscal year of 6 nuclear bombs and warheads currently in Phase 6 production: the B61, the B83, the W82 Artillery Fired Atomic Projectile, the W80-0 and W80-1 for the sea and air-launched cruise missile, and the W88/Trident II.** There are already 1,500 B61's and 1,200 B83's so stopping production now would have no effect on the ability of the U.S. to defend itself. Further, a sharp reduction in the total number of B-2 bombers lessens the need for more B83's and B61's. The W82, scheduled to enter full production this past February, is politically undeployable in Europe and a recent military assessment by the Joint Chiefs' on NATO and Warsaw Pact forces in Europe makes the W82 indefensible on military grounds. There are also 325 nuclear-armed sea-launched cruise missiles (TLAM-Ns) and, although the Navy has expressed a desire to purchase a total of 758, its interest seems to be waning (40 percent of the missiles are not due to be procured until next year). The TLAM-N program could cease at approximately 400-450 warheads if funds are cut this year.

DOE has produced 400 W88/Trident II warheads, 192 of which are currently deployed aboard the USS Tennessee. But there are also over 3,100 Trident I warheads deployed on Poseidon and Trident submarines. We urge you to cancel the W88/Trident II and ask the Navy to make due with the W76/Trident I warhead, which it is currently planning to load on approximately half of the Trident II missiles.

4. **Cancel the next generation of nuclear war-fighting weapons, specifically the B90 Nuclear Depth/Strike Bomb, the Earth Penetrating Warhead, SRAM-II, and developmental high-power microwave weapons.** All these systems are scheduled to enter Phase 4 or 5 in FY 1991. Integrating these weapons into the SIOP (Single Integrated Operational Plan) would contradict longstanding war-fighting policy and would needlessly exacerbate tensions between the U.S. and the Soviet Union. Former high ranking officials such as Admiral William Crowe and John Lehman have recently stated that the concept of a nuclear war at sea is one whose time has past. The B90, therefore, is a weapon without a mission; its cancelation this year would save $1 billion.

5. **Don't permit the DOD to exploit loopholes in a START agreement by building thousands of air delivered nuclear bombs and warheads that are not accountable under the agreed upon rules.** Such actions contravene the purpose of arms control and will needlessly strain the already crippled bomb factories.

6. **Reorient DOE funds away from weapons production and toward time critical cleanup activities and basic energy research and development.** DOE's FY 1991 budget requests $8.5 billion for production activities, a hefty 9 percent increase, while cleanup functions at the Hanford Reservation and elsewhere are underfunded by billions of dollars. It is contradictory to call for real decreases in the defense budget and at the same time accelerate nuclear warhead production. The current budget allows severe contamination problems to continue unabated and needlessly angers state officials and local residents.

Why, for example, is there a need for two nuclear weapons laboratories? Consolidating the Lawrence Livermore and Los Alamos national laboratories would save approximately $1 billion which could be channeled into more urgent programs.

7. **Halt DOE's planned resumption of uranium metal production at the Oak Ridge Y-12 Plant.** The U.S. has not produced highly enriched uranium (HEU) for nuclear weapons since 1964 yet now, as the cold war ends, DOE plans to transfer several thousand kilograms of HEU produced for the naval reactor program to weapons use. Before the HEU can be used in weapons it must be converted to a metal form at Oak Ridge. Like plutonium, HEU is recyclable. DOE currently maintains a surplus of the material. Accelerating the scheduled retirement of 700 uranium-rich W33 atomic projectiles would delay the need for new production. A START treaty would result in a huge surplus of between 50 and 60 thousand kilograms of HEU, making further production unnecessary.

8. **In recognition of the significant easing of international tensions and of other pressing budgetary needs, defer all funds requested for FY 1991 for the construction of new weapons facilities including new production reactors, materials processing facilities, and research and development projects.**

The time has come to recognize that further production of nuclear weapons is doing more to hurt the people in this country than to help them. And despite a recent statement by Vice Admiral Roger Bacon, commander of the Atlantic submarine fleet, that Trident submarines and missiles will act "...as a defense against terrorism, drug trading and other global conflicts," the fact is that no one feels threatened by our nuclear weapons except, ironically, those people who work in or live near the DOE factories that created and perpetuate the arsenal.

TUESDAY, APRIL 3, 1990.

NUCLEAR ENGINEERING EDUCATION AND RESEARCH REACTORS

WITNESS

DR. MARCUS VOTH, PAST CHAIRMAN, NATIONAL ORGANIZATION OF TEST, RESEARCH AND TRAINING REACTORS

Mrs. BOGGS. Dr. Marcus Voth, please, from the National Organization of Test, Research and Training Reactors. We are glad to have you with us, Doctor.

Dr. VOTH. Thank you.

Madam Chairman, Members of the committee. I am Marcus H. Voth, Associate Professor of Nuclear Engineering and Director of the Penn State Breazeale Reactor at the Pennsylvania State University.

I am testifying today on behalf of the National Organization of the Test, Research, and Training Reactors (TRTR) and the Nuclear Engineering Department Heads Organizations (NEDHO). TRTR, which I was given the honor to chair last year, and NEDHO are prominent in addressing the needs of academic programs and facilities in the area of nuclear engineering and university research reactors.

TRTR and NEDHO request your consideration and support for $17 million in fiscal year 1991 for the University Research Reactor and Nuclear Engineering Programs administered through the Department of Energy's office of Energy Research. With your permission, I request that my written testimony be entered into the record.

Mrs. BOGGS. It will be entered in its entirety into the record.

Dr. VOTH. Thank you.

We would like to express our appreciation for your support for $5 million in fiscal year 1988, for $6 million in 1989, and $7 million in fiscal year 1990.

Last year the National Academy of Sciences formed a Committee on Nuclear Engineering and Education to study the status and future direction for the discipline. Information accrued in the study points to a severe near term and long term shortage in nuclear manpower as well as a significant loss in the capacity to produce nuclear engineers within the remaining university nuclear engineering programs. Projections of the demand for nuclear engineers is very strong currently spurred by the clean up work scheduled at several DOE defense laboratories which will consume 60 to 70 percent of all graduates.

With this as a background, we request your support of a proposed three-year budget designed to merely maintain the viability of current nuclear engineering programs. It includes a phased in doubling of research projects over the, a three-year period, adding at least for the next four years 10 nuclear engineering and health physics fellowships, expansion of nuclear educational programs for minority institutions and students and reinstatement of the DOE traineeship program.

Turning to the area of university research reactors, we would like to call your attention to another study of the National Academy of Sciences entitled, "University Research Reactors in the United States, Their Role and Value." A decline to 35 licensed facilities, which is half the original number, is cause for serious concern.

The nuclear engineering departments use these reactors for education and research. It is important to recognize that reactors are a basic research tool serving research in physics, chemistry, biology, medicine, epidemology, environmental violences, material sciences, fluid mechanics, archeology, and so forth.

Other countries have recognized the value of research reactors and respond vigorously. Funding in foreign countries has been about a factor of 10 higher within the United States. These countries are now increasingly competitive in fields of new materials and high technology.

Most of the university facilities in the United States have been in service since the 1950's and 1960's. They are not comparable to the newer installations in Europe and Japan and the USSR and even the emerging countries such as India and Indonesia. By far, the most cost-effective approach to retaining enhancing and utilizing our research reactor capability is to modernize our existing facilities and to enhance user access.

To this end we propose funding for an expanded program, grants for equipment grade and support for reactor based research programs.

My written testimony provides definition and justification for each component of a proposed three-year budget meeting objective. I very much appreciate the opportunity to present these remarks and will be pleased to respond to any of your questions.

Mrs. BOGGS. Thank you so much.

[The statement of Dr. Voth follows:]

Testimony

Presented to the
U.S. House of Representatives
COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

by

Marcus H. Voth

Associate Professor of Nuclear Engineering
and
Director of the Penn State Breazeale Reactor
The Pennsylvania State University
On behalf of the
National Organization of Test, Research, and Training Reactors
and the
Nuclear Engineering Department Heads Organization

April 3, 1990

Mr. Chairman, Members of the Committee, I am Marcus H. Voth, Associate Professor of Nuclear Engineering and Director of the Penn State Breazeale Reactor at The Pennsylvania State University. I am testifying today on behalf of the National Organization of Test, Research, and Training Reactors (TRTR) and the Nuclear Engineering Department Heads Organization (NEDHO). TRTR, which I was given the honor to chair last year, and NEDHO are prominent in addressing the needs of academic programs and facilities in the area of nuclear engineering and university research reactors. TRTR and NEDHO request your consideration and support for $17 million in FY91 for the University Research Reactor and Nuclear Engineering Programs administered through the Department of Energy's Office of Energy Research. With your permission, I request that my written testimony be entered into the record.

TRTR is made up of directors and managers of the 35 currently operating university research reactors in 24 states and focuses on the operation and utilization of these facilities. Similarly, NEDHO is composed of the academic leaders in nuclear engineering and applied nuclear science at colleges and universities in 27 states. We would like first to express our appreciation for the vision and leadership of the Committee which has resulted in the support of $5 million in FY88, $6 million in FY89, and $7 million in FY90, which included $1 million targeted for research reactors. The appropriation has been ably administered by the Office of University Programs in DOE and has had an extraordinarily positive and invigorating impact. In particular, the appropriation has resulted in additional DOE Nuclear Engineering and Health Physics Fellowships, has increased the support at minority institutions and for minority students, has initiated an extremely effective multi-year program in basic nuclear engineering areas, has led to an expansion of the extremely effective DOE Reactor Sharing Program, and has allowed for the acquisition of some new equipment to help upgrade the research reactor facilities. These focus at the heart of national needs; namely, the burgeoning manpower shortage in nuclear engineering disciplines and aging research facilities.

Last year the National Academy of Sciences and the National Research Council formed a "Committee on Nuclear Engineering Education" to study the current status of and to examine the future directions for the discipline. Unfortunately, due to an airplane accident in which the study director was seriously injured, the completion of the study is being delayed. However, preliminary information accrued in the study points to severe near term and long term shortages in nuclear engineering manpower as well as significant loss in capacity to produce nuclear engineers within the remaining university nuclear engineering programs. By examining two aspects, capacity to produce nuclear engineers at all degree levels and the projected need for nuclear engineers in several critical components of the discipline, we believe that a strong case for strengthening the support base for nuclear engineering education is warranted. Over the past decade, from 1978 to 1988, domestic student enrollments at all levels have declined as shown in Table 1. With current staffing levels in university programs, the estimated capacity for expanding enrollment is no more than 25 percent at all levels; at the graduate levels this would require a proportional increase in funded research.

Projections of the demand for nuclear engineers is very strong, currently spurred by the clean-up work being scheduled at several DOE defense laboratories. Over the next five years it is estimated that some 250 to 270 new jobs per year at all degree levels will be created in response to this need. This alone would require 60 to 70 percent of all degree production during the period. Other needs arise in replacing the aging research staff at the DOE national laboratories, the aging professional staff in nuclear engineering academic programs (23 percent are over 60 years old), in staffing the return of the nuclear power industry, and the many non-power applications of nuclear reactors. These factors are expected to create a very sharp growth in manpower need. Appropriate advanced planning is critical when it is realized that 4 to 5 years are required to produce B.S. graduates and 8 to 9 years for Ph.D.'s. In order to retain viable nuclear engineering academic programs, it is critically important to provide the financial resources to at least sustain the viability of current programs.

With this as background, we request your support of the proposed three year budget included as Table 2. It is not designed to address all the long term needs which have been presented, but rather to maintain the viability of current nuclear engineering programs. It includes a phased-in doubling of research projects over a three year period, starting in FY91. This program has stimulated unprecedented response of proposal submissions for innovative new nuclear engineering research. Using peer review and competitive awarding of projects for three years duration, this program is providing faculty and their graduate students previously unavailable opportunities to explore long-term research projects which can have great impact in applied science and technology. This program allows doctoral students the necessary time to complete their dissertations and provides the stability necessary to attract the best domestic students to advanced degree study. From the continued demonstration of need through over 150 proposals submitted each of the first two years (35 being judged by peer review as "must fund" and only 18 being funded each year), we believe that this component of the program deserves to be doubled from $6 million each year (i.e. $4 million in continuing 3 year projects and $2 million in new starts of 3 year projects) to an equilibrium level of $12 million dollars each year. We propose a three year phase-in starting in FY91.

Of particular importance is the DOE graduate fellowship program. These fellowships enable U.S. citizens who might not otherwise pursue graduate degrees to embark directly on Ph.D. programs. The importance of the four year commitment provided by the DOE fellowships cannot be overemphasized. After completing their bachelors' degrees, top caliber U.S. students typically receive several job offers with extremely attractive salaries. While these graduates will undoubtedly make valuable contributions in their professional positions, it is absolutely critical to attract the most capable students to advanced degrees if we are to have the research and teaching capabilities in this country to compete successfully in the burgeoning areas of high technology. Although the number of Ph.D.'s awarded in nuclear engineering and health physics has not changed significantly over the past ten years from near 110, the mix has shifted from 70 percent to less than 60 percent of the degrees going to U.S. citizens. This number of graduates does not begin to approach the new personnel needs of the federal laboratories alone. The situation is also exacerbated by the fact that Ph.D. nuclear engineers, are also vigorously recruited for positions in such fields as materials science, medical applications, accelerator technology, space power applications, and nuclear power plants. It is for these reasons that the DOE Nuclear Engineering and Health Physics Fellowships are especially important because they allow the talented U.S. students to have assured financial support which will take them through to the completion of the Ph.D. degree. Without this type of commitment, many very capable students opt for industry careers which, though important, will preclude their participation in the long-term research endeavors and technology development of the U.S. To respond to this need we have proposed adding in each of the next four years 10 new, fully-funded DOE Nuclear Engineering and Health Physics Fellowships. This would approximately double the existing DOE Fellowship program in these two areas, which is successfully administered through Oak Ridge Associated Universities.

The two other areas in which we believe the needs justify expansion of nuclear engineering educational programs are for minority institutions and students and for reinstitution of the DOE Traineeship Program. The number of minority students in engineering is disproportionately low, and nuclear engineering is no exception. We believe an effective means of counteracting this situation is to channel resources to specific programs within minority institutions, and we are suggesting that $1 million per year could substantially improve minority representation within the field. In order to attract and directly introduce advance degree students to nuclear engineering activities in the DOE national laboratories, we believe that an internship program can be used effectively. We suggest that this can be introduced through a DOE Traineeship Program, and we have proposed initiating this in FY91 at a constant level of $1 million annually.

Turning to the area of university research reactors, we would like to call your attention to the recent study by the National Academy of Science and the National Research Council entitled **University Research Reactors in the United States--their Role and Value**. The decline to 35 currently licensed university reactor facilities at 33 sites, which is half the original number, is cause for great concern. This is especially serious because the university research reactors form a fundamental and vital component in our national research infrastructure. While nuclear engineering departments use these reactors for both education and research, it is imperative to recognize that the university reactors serve a much broader user community than just nuclear engineering. Faculty, students, and researchers from many disciplines carry out extensive activities at these facilities. University research reactors are the focus of multi-disciplinary research efforts resulting in contributions to the fields of physics, chemistry, biology, medicine, epidemiology, environmental sciences, material sciences, fluid mechanics, geology, archaeology, paleontology, forensic sciences, and other areas as well. Further erosion in the number and status of university reactors will have a significant negative impact on our national capability to perform research in many high technology areas.

Three principal techniques which are extremely powerful research tools and unique to reactors are neutron activation analysis, neutron scattering, and neutron radiography. By way of illustration, these techniques have contributed to such diverse studies as:

- Characterization of lunar samples,
- Identification of the aerosol components in arctic haze,
- Structural determination of new high temperature superconductors,
- Measurements of depolarization in single crystal superconductors,
- Understanding of the trade routes in pre-Hispanic Mexico,
- Tracing pollution origins in the atmosphere, groundwater, and oceans,
- Determination of correlations between trace element nutrients and human diseases such as cancer and diabetes.

In education, on-campus reactors are increasingly used as laboratories by students from non-nuclear fields, as well as from nuclear engineering and applied science. University reactors contribute to the education of most of the graduates who are trained in the uses of radiological techniques and serve a broad range of off-campus constituencies including the medical community, industrial organizations, and governmental agencies at both the state and federal level.

I particularly want to comment on the DOE Reactor Sharing Program. This program has allowed faculty and students from other universities, community colleges, high schools, and junior high schools to utilize university reactors. This has led to research projects and lines of inquiry which might never have occurred had there not been a mechanism to access these facilities in a timely manner. The Reactor Sharing Program must rank as one of the most cost-effective and successful expenditures ever made with federal funds. Facilities become regional resources with no constraints imposed by state boundaries. This program must receive continued support and should be expanded to allow the university reactors the ability to serve a broader spectrum and larger number of users including host institution researchers.

Other countries have recognized the value of research reactors and responded vigorously. Major commitments to preserve the viability of neutron sources have been made overseas. In contrast, in the U.S., support for operations, upgrades, and equipment replacement has fallen far behind and those funds which have been available have come primarily from state and private sources. Funding for neutron sources in foreign countries over the past twenty years has been about a factor of 10 higher than in the U.S., and these countries are now well positioned to benefit from this investment in increasingly competitive fields of new materials and high technology. As an indication of the need that exists in the U.S. facilities, in FY90 DOE issued a call for proposals for new equipment to disburse the $1 million appropriated by Congress for that purpose. Thirty-three facilities were eligible to respond and proposals totaling approximately $3 million were received from 28 of the eligible institutions. However, the $3 million amount of these requests does not accurately reflect the need for new equipment, but rather indicates restraint on the part of the research reactor community in responding to DOE's stated interest in providing support to as many institutions as possible. In fact, the TRTR leadership is convinced that the National Academy's estimate of $20 million per year much more closely reflects the true requirements.

While the need for equipment acquisitions at existing facilities is imminent, planning should also commence for major reactor upgrades during the next 5 to 10 years. Most of the university facilities in the U.S. have been in service since the 1950's and 60's, and are not comparable to newer similar installations in Europe, Japan, the USSR, and even in emerging countries such as India and Indonesia. If more decommissionings occur and we lose the research capability represented by our university reactors, and if we do not initiate significant reactor upgrades, we will find ourselves at an increasing disadvantage compared with our international competitors. Furthermore, it would be prohibitively expensive to try to replace this capability by building new facilities. By far the most cost effective approach to retaining and enhancing our research reactor capability is to refurbish and modernize our existing facilities. To assure that a significant upgrade program can be initiated, a step-by-step approach is shown in Table 2 consisting of $1 million for planning in FY91 followed by funds for upgrades of $3 million and $7 million for FY92 and FY93. This approach would have a significant impact on the pressing needs for research reactor modernization.

At research accelerator projects in this country and with successful reactor programs abroad, support is available for base in-house research programs. A similar approach is strongly recommended for U.S. university reactors. Such support would assure that the expertise and advanced equipment are available to permit the efficient utilization of the facilities. For example, to make full use of powerful techniques such as neutron scattering or neutron activation analysis, trained personnel and sophisticated instrumentation must be available to the researcher. It has been repeatedly demonstrated at comparable accelerator facilities or foreign reactors that appropriate funding for in-house support significantly enhances the quality of the research and the effectiveness of the installation. While $10 million annually would be appropriate for this purpose, a budget is proposed which ramps up from $1 million to $8 million during the FY91-93 period.

In the budget proposed, the research reactor component is phased in over a 3 year period with $6 million in FY91, $15 million is FY92, and $23 million in FY93. These figures are consistent with the results of the National Academy study which recommended an annual level of $20 million for university reactors, but in fact identified an overall need of approximately $35 million per year in 1987 dollars. To provide for the most efficient use of these funds, it is recommended that disbursement be based on competitive proposals subjected to the peer review process.

Based on the National Academy study and past experience from the fellowship and research programs, the annual requirements for the nuclear engineering academic departments and the university research reactors in fact currently approach nearly $38 million a year, consisting of $23 million for the reactor component as mentioned previously and $15 million for the academic programs. However, in order to address these levels, as shown in the attached table, NEDHO and TRTR suggest a three year plan to incrementally phase into these levels. For FY91, a $17 million program would include $4 million for ongoing university research projects approved in prior years, $4 million for new research projects, $1 million for fellowships, $1 million for minority institutions, $1 million for a DOE traineeship program, $1 million for an expanded reactor sharing program, $3 million for reactor equipment modernization, $1 million for reactor upgrades, and $1 million for reactor based research programs and operations.

The university nuclear engineering programs and research reactors serve vital roles in assuring the nation's energy supply, providing graduates for key roles in national security, and undertaking leading edge research critical to our competitiveness in high technology areas in the international marketplace. I believe the academic programs and the reactor facilities merit the consideration and support of the Committee. I very much appreciate the opportunity to present these remarks.

Table 1: Comparison of Nuclear Engineering Enrollments and Degree Production in 1978 and 1988

Enrollment		1978	1988
Undergraduate	- Junior	860	560
	- Senior	1150	680
Graduate	- M.S.	1160	760
	- Ph.D.	590 (30% Foreign)	640 (50% Foreign)
Degree Production			
B. S. Degrees		860	480
M. S. Degrees		460	240
Ph.D. Degrees		110 (30% Foreign)	110 (40% Foreign)

Table 2. Proposed FY'91-'93 Budget
for
Nuclear Engineering Education and University Research Reactor Programs

U. S. Department of Energy
Office of Energy Research
Office of University Programs

($M)

	FY90	FY91	FY92	FY93
Ongoing Research Projects	4.4	4.0	6.0	8.0
New Research Projects		4.0	4.0	4.0
DOE Nuclear Engineering and Health Physics Ph.D. Fellowships (10 new, fully-funded for four years)	↑ 1.6	1.0	1.0	1.0
Minority Institutions Program		1.0	1.0	1.0
DOE Traineeship Program		1.0	1.0	1.0
Subtotal - NEDHO		11.0	13.0	15.0
Expanded Reactor Sharing Program	↓	1.0	2.0	3.0
Reactor Equipment Modernization	1.0	3.0	5.0	5.0
Reactor Upgrades	-	1.0	3.0	7.0
Reactor-Based Reserach Programs and Operations	-	1.0	4.0	8.0
Subtotal - TRTR		6.0	15.0	23.0
Total	7.0	17.0	27.0	38.0

Mrs. BOGGS. Unfortunately we have a vote on the House Floor. That is the reason for Mr. Bevill and Mr. Myers' departure. I must go now or I will miss it.

We will have to recess the committee until Mr. Bevill returns. Thank you very much.

[Brief recess.]

TUESDAY, APRIL 3, 1990.

RENEWABLE ENERGY R&D

WITNESS

NANCY RADER, ENERGY POLICY ANALYST, PUBLIC CITIZEN

Mr. BEVILL. The committee will come to order.

Next is Ms. Nancy Rader. You may proceed as you wish.

Ms. RADER. Good afternoon. Public Citizen is a non-profit consumer and environmental lobby. There are about 70,000 members. I am an energy policy analyst with Public Citizen, but I am here today to present to the committee a document that has been compiled and endorsed by 25 national organizations.

It is called "Recommendations for the Department of Energy research and development budget for fiscal years 1991 to 1993." This report calls on Congress to double the current R&D budget for renewable energy technologies. The diversity of groups endorsing this organization, I think, is testament to the broad public support that renewables have.

This document has been endorsed by virtually every renewable energy trade association, by environmental groups ranging from the Sierra club to the National Wildlife Federation, to Renew America to the National Association of State Energy Officials and other consumer environmental and public policy organizations.

A recent poll was conducted that shows that 70 percent of the public would prefer to have the most or second most amounts of money going to renewable energy and energy efficiency. That is just the opposite of what is happening today. This document proposes that Congress double the current levels of funding to $270 million in fiscal year 1991 and that those funding levels rise to $350 million in fiscal year 1993.

These proposed funding levels are comparable to or lower than funding levels for other energy supplies. For example, nuclear fission R&D is funded at almost $600 million, and nuclear fusion is funded at $331 million.

The current level for renewable energy, which includes many very different technologies, each with enormous energy potential, is $113 million or 10 percent of 1980 levels, and less than 20 percent of the current amount spent on nuclear fission.

However, renewable energy resources entail none of the threats posed by fossil and nuclear fuels. They do not cause urban smog or acid rain. They do not generate nuclear waste, and they release little or no carbon dioxide, which threatens our very climate. National security also demands that this country wean itself from imported oil.

The U.S. is now more dependent on foreign oil than it was at the time of the oil embargo in 1973. Renewable energy resources already provide 10 percent of this nation's domestically produced energy, which is more energy than nuclear power provides, and they have a potential to at least double that contribution by the year 2000. Therefore, renewables are in the best place to displace fossil fuels.

This is not only true in the United States, but it is true for the rest of the world as well, and while there is no doubt that renewable energy will provide a greater fraction of the world's energy needs in the future, it is not clear whether U.S. industries will be the ones to provide those technologies because while the Reagan Administration and Congress cut renewable energy by 90 percent, renewable energy R&D by 90 percent during 1980's. Foreign governments significantly increased their support of these technologies, and many countries are now spending a far greater share of their energy R&D budgets and more dollars per capita on renewable energy technologies than is the U.S.

As a result, the U.S. is quickly losing its edge in these international markets. For all of these reasons, the subcommittee should seriously reevaluate the allocation of money within the DOE, but as important as funding levels are, the type of research and development that is conducted is also important.

In the Reagan Administration, they supported only long-term, high risk, high pay-off research and made little effort to commercialize technologies. This policy has to be redirected so that we are supporting the commercialization of technologies that have already been developed. Therefore, our proposal contains a redirection that DOE spend a significant amount of money on cooperative ventures between government labs and renewable energy industries.

We recommend that these cooperative ventures be funded at a level of $64 million——

Mr. BEVILL. Your time is up. We are interested in what you have to say. Would you wrap it up in about 30 seconds?

Ms. RADER. Okay. For comparative purposes, this is a small amount of money. So in summary, we would hope that not only would you increase the President's allocation that he has set out for photovoltaics and biofuels, but you would also increase the budget for other renewable technologies as well. Thank you.

Mr. BEVILL. Thank you very much.

[The statement of Ms. Rader follows:]

PUBLIC CITIZEN

Buyers Up □ Congress Watch □ Critical Mass □ Health Research Group □ Litigation Group

Testimony of

Nancy Rader
Energy Policy Analyst
Critical Mass Energy Project
Public Citizen

April 3, 1990

Public Citizen is a non-profit consumer and environmental advocacy organization founded in 1971, supported by 70,000 members nationwide. The Critical Mass Energy Project is Public Citizen's energy policy arm.

I am here today to present to the committee a document entitled, Recommendations for the U.S. Department of Energy Research and Development Budget for Renewable Energy Technologies, FY 1991 - 1993. This report, which calls upon Congress to double the current R&D budget for renewable energy technologies, has been endorsed by 25 national environmental, consumer, government, public policy and industry associations. Endorsing organizations are:

American Wind Energy Association
Citizen Action
Consumer Federation of America
Environmental Action
Environmental and Energy Study Institute
Environmental Defense Fund
Geothermal Resources Council
Interstate Solar Coordination Council
Maine Audubon Society
National Association of State Energy Officials
National Geothermal Association
National Hydropower Association
Natural Resources Defense Council
National Wildlife Federation
National Wood Energy Association
Passive Solar Industries Council
Public Citizen
Renew America
Sierra Club
Solar Energy Industries Association
Union of Concerned Scientists
United Methodist Board of Church & Society (Dept. of Environmental Justice)
U.S Biomass Industries Council
U.S. Export Council for Renewable Energy
U.S. Public Interest Research Group

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Due to the limited number of pages that can be submitted as written testimony, I have condensed the contents of this 25-page report for the record. However, I am providing each member of the subcommittee with a full copy.

Three compelling issues require the immediate attention of President Bush and Congress: serious energy-related environmental problems, rising oil imports, and the international competitiveness of U.S. industries. A serious recommitment to renewable energy, along with energy efficiency, is necessary to tackle these problems. The 25 groups I am representing today are therefore recommending, as a first step towards supporting the development of these preferable energy resources, that the R&D budget for renewable energy be significantly enhanced to the following levels over the next three fiscal years:

FY 1991: $270.0 million
FY 1992: $311.5 million
FY 1993: $350.7 million

These proposed funding levels are comparable to or lower than current (FY 1990) funding levels for other energy supplies. For example, nuclear fission R&D is funded at $595 million, nuclear fusion at $331 million, fossil energy at $381 million, and clean coal technologies at $190 million. The current funding level for renewable energy--which includes many very different technologies, each with enormous energy potential--is only $113 million, or 10 percent of 1980 levels in real dollars, and less than 20 percent of the amount currently spent on nuclear fission R&D.

The broad-based coalition of groups supporting this recommendation is indicative of the support that these domestic, environmentally-sound energy resources enjoy from the public at large. A recent poll shows that nearly 70% of the American public favors spending the most DOE research and development money on renewable energy and energy conservation, with only 29% supporting nuclear energy, and 24% supporting oil and coal.

In these times of budget deficits and a mounting national debt, it may be difficult to increase overall funding for energy R&D. Therefore, limited DOE funds should be more fairly apportioned among each energy supply option, and should specifically recognize the inherent environmental, trade, and national security benefits that renewable energy technologies offer.

Renewable energy resources entail none of the threats posed by fossil and nuclear fuels; they do not cause urban smog or acid rain, they do not generate nuclear waste for which there is no known safe method of disposal, and they release little or no carbon dioxide, which threatens unprecedented disruption to society due to shifting and unpredictable weather patterns.

National security also demands that this country wean itself from imported oil. The U.S. is now more dependent on foreign oil than it was at the time of the oil embargo of 1973, and imports are predicted to exceed 50% for the first time in history within the next few years.

Renewable energy resources already provide 10% of this nation's domestically-produced energy--that's more than nuclear power's 8%--and they have the potential to at least double that contribution by the year 2000. Therefore, renewables offer the most promising means of displacing fossil fuels in the short-term, second only to increasing the efficiency with which energy is used. This is true in the U.S. as well as the rest of the world.

While there is no doubt that renewable energy will provide a greater fraction of the world's energy needs in the future, it is not clear whether U.S. industries will be the ones to provide the technologies. During the 1980's, the Reagan Administration and Congress cut renewable energy R&D by 90%. Meanwhile, however, foreign governments significantly increased their support of these technologies. Many countries are spending a far greater share of their energy R&D budgets, and more dollars per capita, on renewable energy technologies than is the U.S. As a result, the U.S. is quickly losing its edge in world markets.

For all of these reasons, this subcommittee should seriously reevaluate the allocation of money within DOE's energy R&D budget.

The DOE's own reports have shown that the ability of the renewable energy industries to participate in and absorb the risk of R&D on their own is "low to moderate at best . . . . which should be a significant consideration in determining the priorities for the R&D program overall.

As-important as funding levels is the type of research and development that is conducted. Rather than supporting R&D along the entire continuum of the R&D process, the Reagan administration supported only basic scientific research and made little effort to transfer the knowledge to industry. Little effort was made to commercialize new technologies through joint ventures with industry, nor was the type of practical research conducted that private firms could use to develop commercial products.

This policy must be redirected so that, in addition to advancing basic science, R&D is conducted to transfer the results of research--whether a product, material, or finding--to the marketplace via industry. Therefore, a key change in direction in our Recommendations is for DOE to make an aggressive effort to commercialize renewable energy technologies through cooperative ventures between government laboratories and renewable energy industries. These ventures will develop technologies that have been proven in the laboratory, but which have not yet been demonstrated to work on a large commercial scale. They include developing manufacturing processes for the commercial production of system components, demonstrating new commercial-scale technologies, and testing energy storage systems at distributed renewable energy project sites.

We recommend that these cooperative efforts be funded at a level of $64 million in FY 1991, increasing to $76 million in FY 1993. For comparative purposes, note that $150 million in contracts were awarded in 1989 to Westinghouse, General Electric, and General Atomic (in three $50 million grants) to develop commercial designs for a "passively safe" nuclear reactor.

It is also important, however, to maintain long-term research efforts on technologies and resources that will offer significant potential within 10 or 20 years. The President's proposed budget, while commendable in its effort to redirect research towards commercialization, has unwisely eliminated many long-term research efforts, including work on hot dry rock and magma geothermal energy resources.

In order for the DOE to maintain existing long-term research efforts, as well as initiate projects to promote the near-term commercialization of technologies that have already been developed, the overall budget must be significantly increased. Obviously, the President was not able to accommodate both objectives with a proposed increase of only 17%, and had to sacrifice some long-term research for near-term development.

In fact, the President's budget proposes to actually cut research dollars for wind energy, solar buildings, and ocean thermal energy conversion. As one result, the Administration's proposal does not include funding for an advanced wind turbine, which was authorized by Congress last year. This wind turbine will allow medium-range (14 mph) wind speeds--which are much more widely dispersed throughout the country--to be tapped economically (five cents/kWh).

The President's proposal cuts the budget for solar buildings in half. This is particularly illogical considering that buildings consume 35% of the energy in this country. We would like to urge the committee to pay particular attention to this line-item as it becomes divided between the conservation and renewable energy budgets. In the process of dividing this budget, the Administration has eliminated half of it, which is extremely short-sighted.

While the Administration's proposal is a step in the right direction, particularly its increases in the photovoltaics, biofuels, hydro, and solar thermal detoxification system budgets, we strongly urge the committee to extend the increases to the rest of the renewable technologies by increasing the budget overall. These other technologies--especially wind, solar buildings, solar thermal electric, and geothermal--for which the Administration has proposed to either reduce or maintain at current funding levels, offer at least as much potential to U.S. energy supplies than those slated for increases.

In our full report, we detail recommendations for specific joint venture projects that the DOE should undertake to promote the near-term development of renewable energy, as well as long-term research efforts. However, the space limitations of this testimony allow us only to list the overall recommended funding level for each renewable resource. They are as follows:

SUMMARY FOR ALL LINE-ITEMS	FY 91	FY 92	FY 93
Joint Initiatives	$64.4	$69.2	$76.4
Biofuels	$32.5	$37.5	$42.0
Geothermal	$40.7	$38.7	$37.7
Hydrogen	$ 5.0	$ 6.0	$ 7.5
Hydropower	$ 5.5	$ 8.0	$ 3.5
Photovoltaics	$48.0	$58.0	$67.5
Solar Buildings	$12.5	$14.4	$19.7
Solar Thermal	$30.0	$35.0	$41.5
Wind	$11.0	$21.0	$25.5
Associated Line Items	$20.4	$23.7	$29.4
TOTAL	**$270.0**	**$311.5**	**$350.7**

Without increasing the overall budget, these funding levels cannot be achieved without more fairly apportioning R&D monies among the various divisions within DOE. For every dollar the U.S. spends on energy R&D, less than six cents goes to all the renewable energy technologies combined. Yet, these cleaner energy resources have greater energy potential, a lower price tag, and greater public support than nuclear fission, nuclear fusion, and fossil energy research.

The 25 organizations I am representing today call upon this subcommittee to recognize the inherent environmental, national security and trade benefits of renewable energy, and to make its development a high priority within the DOE.

I appreciate this opportunity to present the views of these organizations on this subject, and would like to extend our thanks to the committee.

American Wind Energy Association

Citizen Action

Consumer Federation of America

Environmental Action

Environmental and Energy Study Institute

Environmental Defense Fund

Geothermal Resources Council

Interstate Solar Coordination Council

Maine Audubon Society

National Association of State Energy Officials

National Geothermal Association

National Hydropower Association

Natural Resources Defense Council

National Wildlife Federation

National Wood Energy Association

Passive Solar Industries Council

Public Citizen

Renew America

Sierra Club

Solar Energy Industries Association

Union of Concerned Scientists

United Methodist Board of Church & Society (Dept. of Environmental Justice)

U.S. Biomass Industries Council

U.S. Export Council for Renewable Energy

U.S. Public Interest Research Group

Recommendations for the U.S. Department of Energy Research and Development Budget for Renewable Energy Technologies FY 1991 - 1993

January 1990

Contents

I. Introduction 1

II. Status & Potential of Renewable Energy 4

III. Additional Funding Necessary to Meet Near-Term Goals 5

IV. Research Efforts Must Be Redirected 6

V. Recommended Funding Levels By Line Item 10

  A. Joint Industry/Government Initiatives 10

  B. Research & Development 13

    Biofuels 13

    Geothermal 14

    Hydrogen 15

    Hydropower 16

    Photovoltaics 17

    Solar Buildings 18

    Solar Thermal 19

    Wind 20

    Associated Line Items 22

    Summary for All Line Items 23

Appendix (Budget History Tables) 25

I. Introduction

Over the past eight years, renewable energy technologies have suffered severe cutbacks in the U.S. Department of Energy's research and development (R&D) budget. While virtually all of the renewable energy industries have made significant advances despite this neglect, considerably more progress could have been made with greater government support, both in technology advancement and in market penetration within the U.S. and abroad.

While the U.S. was cutting back its commitment to renewables, however, foreign governments increased their support of these technologies by funding research initiatives and by assisting their industries in developing export markets within developing countries. As a result, the U.S. is quickly losing its edge in world markets.

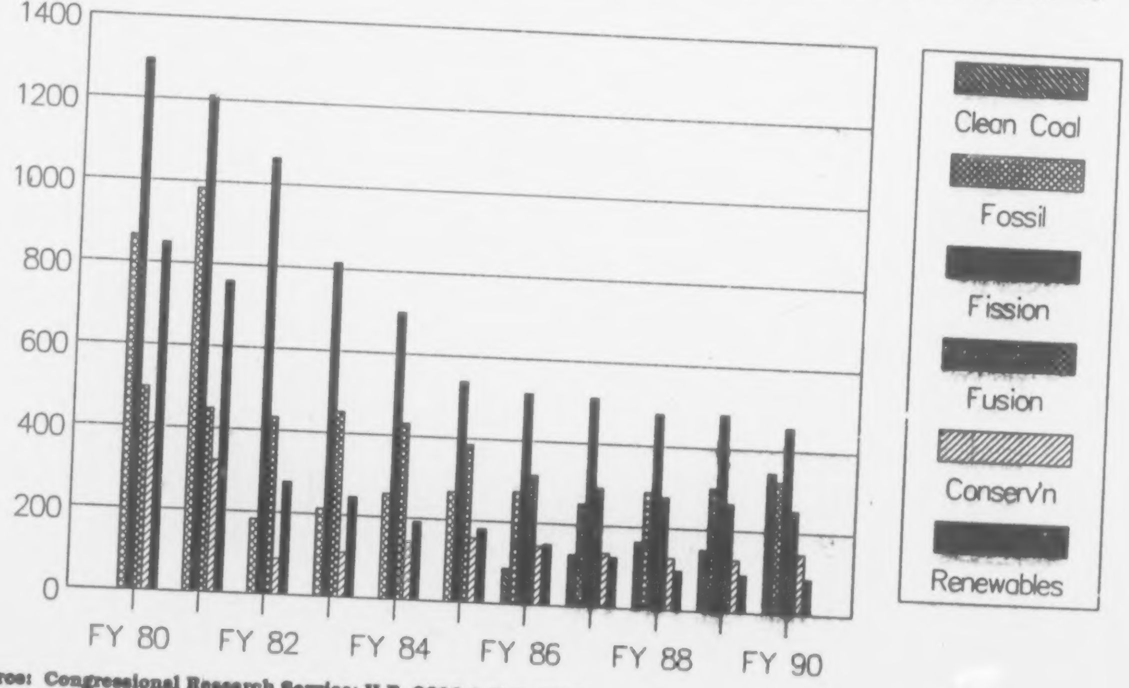
For example, while the world market for photovoltaic (PV) cells is doubling every three years, the U.S. share of that market is rapidly declining. In 1980, the U.S. share of the world PV market was 75 percent, but fell to 47 percent in 1984, and to 32 percent in 1988. Meanwhile, Japan's share has increased from 15 percent in 1980 to 37 percent in 1988. Similarly, the U.S. share of the non-U.S. world market for wind power turbines was 27 percent in 1983, but dropped to only 5 percent in 1987.

Many foreign governments are spending a far greater share of their energy R&D budgets, and more dollars per capita, on renewable energy technologies than is the U.S. Even in terms of actual dollars the U.S. is being outspent. For example, West Germany and Japan now spend approximately $60 million and $40 million, respectively, on photovoltaic R&D, while the U.S. spends $35 million. Six European countries are spending as much or more on wind energy development than is the U.S.

Active export promotion by governments has also been instrumental in gaining increasing market shares. While the U.S. spends approximately $1 million annually on export promotion for all the renewable technologies combined, the European Community (EC) spends over 30 times that amount on PV export promotion alone. For example, the EC is directing $30 million for PV/wind water pumping in its African Development program, which is almost as much as the U.S. spent on its entire R&D program for PVs in 1989.

More urgent than regaining standing in world markets, however, are the environmental threats posed by U.S. reliance on fossil and nuclear fuels. Urban smog, acid rain, and nuclear waste are already costing an untold amount in health care costs, agricultural crop losses, waste storage and cleanup costs, and other damages. Unless quickly abated, climate change caused by increasing carbon dioxide emissions threatens unprecedented disruption to society due to shifting and unpredictable weather patterns.

Figure 1. U.S. Department of Energy Research & Development Funding, 1980-1990, Millions (in adjusted, 1982 dollars)



Data Source: Congressional Research Service; H.R. 2696 & H.R. 2786.

Because renewable energy technologies have the near-term potential for significant growth--energy from renewables could at least double by year 2000--they offer the most promising means of displacing fossil fuels in the short-term, second only to increasing the efficiency with which energy is used.

National security is yet another justification for increased expenditures on renewable energy R&D. In 1989, the U.S. imported 46 percent of the oil it consumed. Because oil prices have been low in recent years, the U.S. is now more dependent on foreign oil than it was at the time of the oil embargo of 1973. If current trends continue, the U.S. will import a majority of its oil during the next few years for the first time in history.

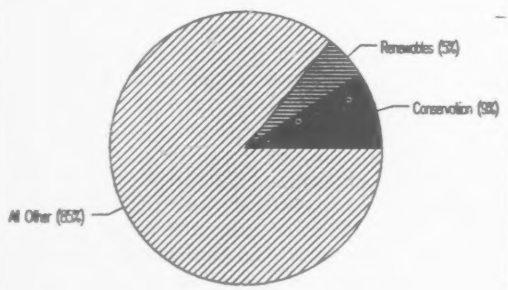
These three compelling issues require the immediate attention of President Bush and Congress. To tackle these problems, this country must recommit itself to the development of renewable energy and energy efficiency. A coalition of renewable energy industry associations, consumer and environmental advocacy organizations, and state government officials have therefore joined together to propose research and development funding levels and initiatives, contained herein, for the Department of Energy's renewable energy program for fiscal years 1991 to 1993 that will be necessary in this effort. The recommended funding levels for renewable energy are:

FY 1991: $270.0 million
FY 1992: $311.5 million
FY 1993: $350.7 million

These proposed funding levels are comparable to or lower than current (FY 1990) funding levels for other energy supplies. For example, nuclear fission R&D is funded at $595 million. Other funding levels are nuclear fusion at $331 million, fossil energy at $422 million, and clean coal technologies at $450 million. The current funding level for renewable energy--which includes many very different technologies, each with enormous energy potential--is only $113 million, or 10 percent of 1980 levels in real dollars (adjusted to account for inflation), and less than 20 percent of the amount currently spent on nuclear fission R&D. (See Figures 1 and 2 and appendix tables.)

Furthermore, a recent poll shows that nearly 70% of the American public favors spending the most DOE research and development money on renewable energy and energy conservation, with only 29% supporting nuclear energy, and 24% going to oil and coal.[1]

Figure 2. U.S. Department of Energy Funding, FY 1990; Fossil, Coal, Nuclear vs. Conservation and Renewables.



In these times of budget deficits and a mounting national debt, it may be difficult to increase overall funding for energy R&D. Therefore, limited DOE funds should be more fairly apportioned among each energy supply option, and should specifically recognize the inherent environmental, trade, and national security benefits that renewable energy technologies offer.

The multiple benefits of renewable energy warrant a significantly enhanced, long-term commitment to renewable energy R&D over the next decade. While a large, sudden influx of money is not advised, programs should be developed such that funding is gradually increased over a period of three to five years to significantly higher levels. The budget should be predictable, which would be facilitated by a multi-year authorization bill.

The second section of this document details the near-term energy supply potential of renewable energy. The third section explains why additional R&D funding is essential for meeting these near-term goals. The fourth section explains how the type of research being recommended here differs from the research path taken during the past eight years, and briefly describes the type of initiatives that are recommended for each renewable technology. Finally, the fifth section of this document outlines the recommended funding levels by line item.

II. Status & Potential of Renewable Energy

Renewable energy, in both electric and non-electric forms, currently represents almost ten percent (6.1 quads in 1988) of U.S. domestic energy production--more than is provided by nuclear power, and far more than clean coal technologies provide.[2]

In terms of electricity alone, renewable resources represent over 97,000 megawatts (MW) of capacity. Of that, more than 9,500 MW--the equivalent of more than 10 average-size nuclear plants--is contributed by solar, wind, geothermal and biomass technologies.[3]

Electricity represents roughly half of the energy contributed by renewable resources, while the production of process heat and steam and space heat from the direct combustion of biomass makes up the other half. Additionally, over one million solar buildings--those designed to meet energy needs through natural heating, cooling and lighting, and those that incorporate active solar water and space heating systems--are displacing the need for conventional fuels.

Despite these impressive figures, renewable energy technologies have not nearly reached their potential. Within the next decade, energy from renewable supplies could at least double, with renewable-based electric capacity growing by over 30,000 MW[4] the equivalent of four percent of total current U.S. electrical capacity, or 60 average-sized (500 MW) coal plants.

The longer-term potential of renewables is significantly higher: a recent DOE study shows that 92 percent of the U.S. accessible resource base is comprised of solar, biomass, geothermal and wind resources, while less than eight percent is represented by coal, oil, natural gas and uranium resources[5]. Backed by aggressive public and government support, other government studies have shown that research advances could allow renewable energy from some 43 renewable technologies to compete to provide up to 80% of the national annual demand for energy in the year 2010.[6]

The degree to which this potential is realized will depend on the development of various government initiatives. However, enhanced research and development is of fundamental importance to increasing the share of renewable energy in the U.S. energy mix.

III. Additional Funding Necessary to Meet Near-Term Goals

In spite of the huge potential of renewable energy, the Reagan Administration cut the Department of Energy's (DOE) R&D budget for renewable energy every year since taking office in 1981. In adjusted 1990 dollars, the budget dropped from almost $1 billion in fiscal year (FY) 1981 (the last budget of the Carter Administration) to $113 million in FY 1990 (see appendix tables). Thus, over eight years, the renewable energy budget was cut by almost 90% in real dollars, compared to 46% for energy supply R&D overall.[7] The share of energy R&D spending for renewables dropped from 19% in FY 1981 to 4% in FY 1989.[8] If this rate of decline continues, the renewable energy R&D program would end in two to four years.

A 1987 GAO report concluded that the development of renewable technologies was substantially affected by discontinued federal R&D support during the Reagan Administration because the private sector could not compensate for DOE's reductions.[9] As a result of the administration's policy, U.S. technology development has been delayed, according to the GAO, and could "be very costly" to energy security should oil prices rise relatively quickly and substantially as they did in past oil disruptions.

The GAO cited several reasons why renewable industries have not compensated for reduced government R&D: (1) the lack of a stable industry with the resources to perform research; (2) the high risk of investing in expensive demonstration projects which the industry is unwilling to undertake without government support; (3) the uncertainty over and elimination of tax credits; (4) the falling price of conventional fuels and reductions in the demand for electricity which affect the profitability of technology development; and (5) increased foreign competition.

The recent purchase of the Atlantic Richfield Co.'s Arco Solar division by Siemens A.G. of West Germany serves as a compelling example of this. The division was put up for sale due in part to losses the company absorbed on research.[10] While Arco Solar spent $100 million on research over the past 7-8 years, only $3 million of this was cost-shared with the government.[11]

An earlier (1985) report by the Energy Research Advisory Board (ERAB) to the DOE reached similar conclusions. That report said that the degree of market and technical risk of renewable energy technology development is moderate to high (with the exception of hydropower) and that the private sector's ability to participate in and absorb the risk, while it varies across technologies, is "low to moderate at best."[12] The level of effort required is substantial compared to the resources of the renewable energy industry, the report said, which "should be a significant consideration in determining the federal level of effort in establishing priorities for the federal program."

The ERAB study concluded that a "relatively broad federal role" is necessary to "support properly the national objective of energy supply diversification," not only in basic research, but also in technology transfer, resource assessment, and testing and standards.

While the report did not specify a level of sustained investment, it advocated that funding levels remain at least at then-current (1985) levels ($236 million in adjusted 1990 dollars).

IV. Research Efforts Must Be Redirected

As important as funding levels is the type of research and development that is conducted. Rather than supporting R&D along the entire continuum of the R&D process, the Reagan administration supported only basic scientific research and made little effort to transfer the knowledge to industry. Little effort was made to commercialize new technologies through joint ventures with industry, nor was the type of practical research conducted that private firms could use to develop commercial products.

This policy must be redirected so that, in addition to advancing basic science, R&D is conducted to transfer the results of research--whether a product, material, or finding--to the marketplace via industrv. This includes constructing and operating commercial-scale plants and manufacturing processes, developing energy storage capabilities, and improving a technology's operability, reliability, economics and environmental impact. Additionally, work must be done to remove the technical, economic, and institutional barriers to renewable energy technologies in the marketplace. These goals can best be achieved with the involvement of industry throughout the process.

A key change in direction proposed herein is an aggressive effort to commercialize renewable energy technologies through cooperative ventures between government laboratories and renewable energy industries. These ventures will develop technologies that have been proven in the laboratory, but which have not yet been demonstrated to work on a large commercial scale. They include developing manufacturing processes for the commercial production of system components, demonstrating new commercial-scale technologies, and testing energy storage systems at distributed renewable energy projects sites.

These cooperative efforts would be funded at a level of $64 million in FY 1991, increasing to $76 million in FY 1993. For comparative purposes, note that $150 million in contracts were awarded in 1989 to Westinghouse, General Electric, and General Atomic (in three $50 million grants) to develop commercial designs for a "passively safe" nuclear reactor.

Renewable energy technologies vary widely in both their science and their application. Each is at a different stage of development. Some, such as hydropower and certain biomass combustion technologies, are fully competitive and well-developed in the marketplace, but face cumbersome and often inconsistent regulatory barriers. Many solar building designs are fully cost-effective, but are not routinely incorporated by designers and builders who lack necessary information and expertise. Other technologies, such as photovoltaic systems, are cost-competitive in some energy markets (e.g. off-grid application) but need further cost reductions to become fully competitive (e.g. for utility application).

Most renewable technologies, however, whether partially or fully cost-competitive, still remain under-utilized in the marketplace, and require a collaborative industry/government effort to foster market development.

While R&D is not the only government support necessary to aggressively and effectively promote the use of renewable energy, it can help overcome three barriers to its development:

- reduce upfront capital and lifecycle costs through technological and manufacturing advances;
- create consistent regulatory frameworks within which resources can be properly and predictably developed; and
- transfer new technologies from the laboratory to the marketplace.

Research needs for specific renewable technologies are outlined briefly below, while specific line items are more fully detailed in the following section.

Joint Government/Industry Initiatives: To effectively transfer laboratory successes into the marketplace, DOE should develop cooperative ventures between government laboratories and industry for each renewable energy technology. The development of commercially-viable renewable energy manufacturing processes, commercial-scale facilities, building construction techniques and methods of information transfer, and energy storage technologies are of central importance in reducing the cost of renewable energy and in keeping U.S. industries competitive in world markets.

Biofuels: New research and development initiatives in the conversion to liquid fuels by thermal and chemical treatment of biomass feedstocks will enable the price of renewable-based biofuels to become competitive with gasoline in the 1990's. Continued advances in biochemical conversion will make other renewable-based liquid as well as gaseous fuels cost-competitive with other petroleum products. New research in direct biomass combustion will develop more environmentally sound and economical energy production technologies, and help overcome regulatory barriers. Regional biomass programs will promote technology transfer, develop resource assessments, and study environmental impact mitigation strategies.

Geothermal: Geothermal energy--the heat of the earth--currently powers over 2,900 megawatts of electric capacity in the U.S. However, of the four types of geothermal resources--hot water and steam hydrothermal, geopressured, hot dry rock and magma--only high temperature hydrothermal resources can now be tapped economically. Technology improvements are needed before the more difficult moderate-temperature hydrothermal resources can compete economically with conventional power generation technologies. Providing support for technology development and transfer through government/industry cooperation is the focus of the geothermal R&D program. Its priorities are governed by those research paths which appear to hold promise for future near-term economic expansion of geothermal development and use.

Hydrogen: Hydrogen can be produced by using electricity to break the bonds of water to free hydrogen molecules. Using renewable electricity sources instead of fossil or nuclear fuels is ideal because of their few environmental impacts. The hydrogen program is currently included within the biofuels program, but should be established as its own line-item. Research should be expanded to include applied research, and prototype vehicles and energy systems. This would include the development of hydrogen generators that are combined with various renewable energy facilities.

Hydropower: New research includes analysis of various environmental mitigation strategies with the goal of identifying successful methods and establishing standards.

Photovoltaics: Major new initiatives will lower the cost of PVs, allowing them to compete with conventional peak-power utility- generated electricity by the year 2000. Research will focus on the development of higher-efficiency thin films that can easily be incorporated into assembly line production, fundamental research in photo-electric materials development, utilization of concentrators to increase efficiency beyond 35 percent, and utility-scale systems research. Industry initiatives will include scaled-up manufacturing capabilities for utility-scale systems.

Solar Buildings: New programs will promote the use of existing, cost-effective technologies and designs in the marketplace. For example, builder guidelines and computer programs for energy efficient building envelope designs have already been developed through SERI, but need to be widely disseminated to industry. Research includes systems integration of passive solar designs and active solar technologies along with other energy conserving techniques. This will enable the building trades, architects and engineers to more easily incorporate energy-conserving innovations in conventional buildings. Further development of insulation systems, advanced window films for insulation as well as new window technologies such as electrochromic glass will maximize energy saving properties of these building components.

Solar Thermal: New research for parabolic trough concentrators will increase their efficiency and reduce cost by developing the direct use of steam to replace the use of synthetic oil as a heat transfer fluid, manufacturing front-surface mirrors, and developing sun-tracking methods. An enhanced second generation of central receivers will be developed, and system tests of dish concentrators will be conducted where they are used in conjunction with heat engines to produce electricity. The dish systems are expected to be commercialized by the early 1990's and can be ready for larger-scale utility use if R&D testing is accelerated.

Wind: New thrusts include advanced component testing to improve existing technology and insure durability, and developing a mid-sized (300-kW) wind turbine to fill an important market niche in foreign markets. A government/industry partnership in an advanced turbine program along with research and development of hybrid systems with other renewable and conventional energy generators will lead to important breakthroughs in price and reliability.

International Program: This budget will be used to support the Committee on Renewable Energy Commerce and Trade (CORECT), the federal interagency effort to promote renewable energy exports. Greater market identification, financing, and market promotion projects are necessary to meet more aggressive international competition, particularly from Denmark, West Germany and Japan.

Resource Assessment: This program identifies resource availability worldwide.

Technology Transfer: Technological advances and program successes are transferred to academic institutions and industry to promote commercialization of renewable technologies.

Capital Equipment: Upgrade of DOE laboratory equipment, including a new building for the Solar Energy Research Institute (SERI).

Solar Program Support: Analysis of market factors that will bear on the eventual success of renewable technologies in the marketplace is essential to support the long-range planning of the Department of Energy's renewable energy research program. An expansion of SERI's Analysis and Evaluation Office will enhance abilities in this area.

V. Recommended Funding Levels By Line-Item (millions)

A. Joint Industry/Government Initiatives

	FY 91	FY 92	FY 93
Biomass Electric Plant	$6.0	$6.0	$6.0

Demonstration of a promising new direct combustion technology in a 6O-MW baseload electric plant.

	FY 91	FY 92	FY 93
Biomass Liquid Fuel Processing Facility	$3.0	$3.5	$4.0

Research advances at government laboratories have brought conversion technologies to the point where ethanol fuel can be produced from biomass waste feedstocks. Because feedstocks are about half the cost of ethanol production, wastes that are free or that can be obtained with a tipping fee can bring ethanol to, or close to, a cost that is competitive with petroleum. However, a large-scale production facility utilizing a waste feedstock such as newspapers and other paper waste must be designed and built to demonstrate the feasibility of a commercial-scale facility.

	FY 91	FY 92	FY 93
Steam-Injected Gas Turbine	$1.0	$1.0	$1.0

This technology, which has been commercially fueled with natural gas and distillate fuel, has not been tested using wood, wood waste, or agricultural wastes as a feedstock. However, use of biomass feedstocks that are converted to gas in a pressurized gasifier will enable the "STIG" to produce electricity at 4-6 cents/kwh. The technology has widespread application potential in remote areas and in developing countries.

	FY 91	FY 92	FY 93
Photovoltaic Manufacturing Initiative	$25.0	$30.0	$35.0

Cost-shares with U.S. industry to lower systems installations costs by lowering framing, support structure, battery, junction boxes and connectors, and other balance of systems costs. Developing commercial manufacturing processes for large, utility-scale photovoltaic systems is of central importance in moving photovoltaics into the utility sector. Utility application will enable industry to meet a goal of 1,000 megawatts on-line by year 2000.

	FY 91	FY 92	FY 93
Advanced Hybrid Systems	$0.3	$0.5	$0.6

Design assistance on hybrid photovoltaic/wind and diesel R&D to insure interconnection matching and to expand usage of systems. Design assistance and testing would be an important added dimension to this program.

Solar Building Outreach Program $1.1 $1.7 $2.3

Government laboratories have developed solar building technologies and design guidelines that are not penetrating new construction. Several efforts are necessary to promote these concepts in the marketplace: 1) Educating and disseminating information among lenders, utilities, planners, local governments and builders, and developing incentive programs for use by utilities and local and state governments; 2) DOE coordination of other federal agencies (e.g. DOD, HUD, FNMA, GSA) to encourage them to use passive and active solar building designs in federal buildings and public housing; 3) Cost-sharing programs for the construction and energy savings monitoring of model energy conserving buildings that incorporate solar designs are needed to demonstrate newly-developed technologies and methods.

Solar Detoxification System $1.5 $1.5 $2.0

Recent breakthroughs in laboratory research allow solar technologies to efficiently destroy toxic chemicals through solar flux. A cost-sharing program is needed to develop a commercial-scale solar detoxification system for water purification and hazardous waste destruction.

Central Receiver Initiative $12.0 $12.0 $12.0

A cost-share program for the second generation of central receivers (specifically the heat transfer and concentrator components) at Solar One is necessary to achieve its true commercialization by the mid-1990s.

Advanced Solar Thermal Technologies $4.0 $4.0 $3.0

This initiative would improve the current generation of solar thermal parabolic trough as well as stretched membrane dish technologies. It would improve several components including: direct steam transfer, using water as a working fluid to eliminate the use of synthetic oil as a heat exchanger, thus making the system more efficient and cost-effective and removing the toxic hazard of the synthetic oil; developing front-surface parabolic mirrors which use plastic or metal to reflect light--no U.S. manufacturers currently have this technology; and advanced sun-tracking devices including tilt and double-axis technologies.

Energy Storage Systems $3.0 $4.0 $5.0

Development and demonstration of on-site thermal and electric battery storage systems sized for remote use of solar thermal, photovoltaic, and wind systems to provide dispatchable (guaranteed) electricity. Other batteries would be geared to utility-connected renewable energy systems as well as wind/pv/diesel hybrids.

Advanced Wind Turbine..................................$7.0 $4.0 $4.0

Approximately $7 million will be required in FY 91 for fabrication of wind turbine designs selected under the Advanced Turbine Development program. This amount would permit two designs to be carried through to the commercial prototype stage. (In FY 89, DOE spent $2.3 million on aerodynamics, which is included in this line item.)

Small Wind Turbine $0.5 $1.0 $1.5

There is a huge international market for small wind turbines (up to 50 kW) designed for off-grid applications such as remote village electrification or water pumping. The reliability of wind technology for this market has been demonstrated, but the capital costs are still often substantially higher than the market requires. Additional R&D should be focused on this market through cost-shared cooperative research with industry in order to apply advanced technology to small turbines so as to reduce the cost and increase the competitiveness of American technology.

TOTAL FOR JOINT INITIATIVES $64.4 $69.2 $76.4

B. Research & Development

BIOFUELS

	FY 91	FY 92	FY 93
Terrestrial Crops	$7.0	$7.5	$8.5
Development of short rotation woody and herbaceous energy crops and commercialization of the techniques.			
Thermochemical Conversion	$5.5	$7.0	$7.5
Development techniques to produce gaseous and liquid fuels through heat and chemical treatment of biomass feedstocks.			
Biochemical Conversion	$9.0	$10.0	$11.0
Development of anaerobic digestion and ethanol production technologies.			
Regional Programs	$6.0	$7.0	$8.0
The regional programs conduct technology transfer, resource assessments, environmental impact and mitigation and promotion of biofuels utilization.			
Direct Combustion	$5.0	$6.0	$7.0
Development of ash disposal techniques, conduct research into combustion dynamics and co-firing, wood fuel storage and delivery systems and statistical information.			
TOTAL	**$32.5**	**$37.5**	**$42.0**

GEOTHERMAL

	FY 91	FY 92	FY 93
Hydrothermal Resources..............................	$16.7	$16.7	$16.7

Reservoir Technology: Reservoir definition studies, improvement of reservoir performance, field management and high-temperature instrumentation. This will maximize geothermal energy production from the field reservoirs, minimize cost of exploration and production, and reduce commercial risk to the investor public. These studies would target those regions with the greatest resource presence or potential such as the Geysers and Cascades region.

Hard Rock Penetration (Drilling) : High performance drilling tools, formation testing studies, drilling fluid/lost circulation cost controls. These R&D efforts will reduce development costs of drilling geothermal wells which are substantially more expensive than oil and gas wells due to the indigenous hard geologic regime found near geothermal resources.

Hydrothermal Industrialization: Technology transfer of completed, proven research to the public sector through joint ventures and cost-share research and development as are currently under way in the Cascades to a limited degree.

Conversion Technology: Studies of new and hybrid power cycles, materials testing and advanced control technology. This will maximize the value of extracted energy resources which can be found within geothermal resources. For example, chemical and heat energy are commonly found in a geopressured resource.

Geopressured Resources................................	$7.0	$7.0	$7.0

Drilling and workover operations, well testing, reservoir evaluation and modeling, subsidence studies, data gathering. Includes second site in 1992. The principal thrust of this research is to better understand the extent and geologic mechanisms of this vast energy resource.

Hot Dry Rock Resources	$10.0	$10.0	$9.0

Well operations, reservoir evaluation, other site studies and proof of economic viability. A long term flow test of the hot dry rock reservoir is necessary to demonstrate to industry and investors the sustainability and commercial competitiveness of a hot dry rock power plant.

Magma Energy	$7.0	$5.0	$5.0

Studies on resource location and spatial definition, engineering feasibility, development of advanced drilling and completion technology and development of energy extraction technology. The objective of this research is to test initial engineering concepts which will lead to successful commercial development.

TOTAL...	$40.7	$38.7	$37.7

HYDROGEN

The research that has been conducted on hydrogen to date has been primarily basic scientific research, and the program has been submersed in the biofuels budget. Therefore, this is the start of a new, full-fledged R&D effort for hydrogen.

	FY 91	FY 92	FY 93
Technical Research	$3.5	$4.0	$4.5

Existing pure technical research activities should be continued with a status report to the U.S. Congress.

	FY 91	FY 92	FY 93
Storage System Development	$0.75	$1.0	$1.5

Methods of hydrogen storage must be developed. Research would include cryogenics, and pressurized and unpressurized chemical systems.

	FY 91	FY 92	FY 93
End-Use Technologies	$0.75	$1.0	$1.5

Applied research should be established with the existing renewable energy industries to develop hybrid hydrogen generators intertied to renewable energy facilities. (While intermittent solar and wind resources generally match peak electric load curves, hydrogen can provide these technologies with a means of storing the energy that is produced during off-peak times, making the systems more reliable and cost-efficient. Hydrogen can also be produced through biochemical conversion or by using biomass-generated electricity.) Additionally, planning should begin for a series of prototype hydrogen vehicles and hydrogen-fueled electric plants.

	FY 91	FY 92	FY 93
TOTAL	$5.0	$6.0	$7.5

HYDROPOWER

	FY 91	FY 92	FY 93
In-Stream Flow Methodology Study	**$2.0**	**$2.0**	**$1.0**
Compilation of current methods of determining in-stream flows for various stream characteristics and fish species, to verify how they do or don't work in different geographic regions, with the goal of establishing standardized methodologies.			
Hatchery vs. Natural Fish Study	**$1.0**	**$3.0**	**$1.0**
Study of hatchery fish vs. natural fish to determine genetic differences and whether or not these differences affect survival.			
Study of Weather Service Data and Probable Maximum Flood in Relation to Dam Design Criteria	**$2.0**	**$2.0**	**$0.0**
Examination of weather service data for probable maximum floods and design storms, to determine how they can be applied accurately to design criteria for dams.			
International Markets	**$0.5**	**$1.0**	**$1.5**
Technical assistance to investors or buyers of hydropower facilities, such as foreign governments or multi-lateral development banks.			
TOTAL	**$5.5**	**$8.0**	**$3.5**

PHOTOVOLTAICS

	FY 91	FY 92	FY 93
Advanced Thin-Films Materials Research	**16.5**	**$16.5**	**$19.0**

Government/industry cooperative effort to increase the efficiency of amorphous silicon and new thin-film photovoltaic materials--copper indium diselenide (CIS) and cadmium telluride (CdTe)--and to resolve technical issues regarding advanced manufacturing of thin-films.

High Efficiency Research	**$9.0**	**$10.5**	**$11.5**

Basic science to investigate special properties of crystal silicon and thin-films through the use of optics and "stacking" to increase efficiencies to 30-35% for use by utilities.

Fundamental Materials Research.....................	**$7.5**	**$7.5**	**$9.0**

Support of a basic university research program in solid state and new concept fabrication of the newest silicon technologies. Three-year competitive research programs are essential if the U.S. is to maintain its competitive edge.

Collector Systems Research	**$6.0**	**$12.0**	**$14.5**

Use of concentrators to enhance photovoltaic output as well as utility experiments with new configurations of PV systems. The program is important to insure that utilities gain hands-on experience and participate in systems development and testing.

Systems Research	**$7.5**	**$11.5**	**$13.5**

Data analysis of large photovoltaic systems are necessary for reliability and consumer acceptance. Includes design and market assistance regarding specifications, loads, and resource assessment and audit.

Capital Equipment	**$ 1.5**	**$ 0.0**	**$ 0.0**
TOTAL..	**$48.0**	**$58.0**	**$67.5**

SOLAR BUILDINGS

FY 91 FY 92 FY 93

Solar Cooling & Dehumidification $1.9 $2.2 $2.5

A significant amount of energy is used to cool buildings. Solar dehumidification and cooling has been proven but further R&D must be accomplished to increase efficiency and provide specialized assistance in measurement of energy savings and building code acceptance of new equipment.

Daylighting $2.5 $3.5 $4.0

Use of new design and building techniques to bring light into building interiors through active and passive means could cut building loads by 15 percent. Systems integration with high-efficiency light bulbs and reflectors as well as photovoltaic systems is necessary.

Solar Heating Research $4.0 $4.5 $7.0

Use of advanced solar collectors, advanced glass, insulation systems, and new materials can reduce building heating loads by 20 percent. With only incremental costs to incorporate into buildings, new materials may be the easiest way to achieve long-term energy conservation.

Advanced Glazing Research $0.7 $0.7 $0.7

Development in advanced glazings for solar collectors and for passive solar utilization to speed commercialization of more efficient technologies.

Solar Systems Integration $2.9 $3.5 $5.5

Since lighting, heating, and cooling in buildings account for 35 percent of total energy use in the U.S., integrating energy conserving equipment more efficiently and effectively into new buildings will provide greater energy savings at lower cost. Research on the interaction of systems within the building and the development of practical strategies for integrating conservation and passive and active solar designs are necessary.

Capital Equipment .... $ 0.5 $ 0.0 $ 0.0

TOTAL.. $12.5 $14.4 $19.7

SOLAR THERMAL

FY 91 FY 92 FY 93

Collection Technology................................ $10.0 $12.0 $15.0

Second and third generation concentrators and receivers need to be deployed and tested. The program will insure the development of more cost-effective trough technology (near $.05/kWh) and dish/engine technology (below $.08/kWh).

Energy Conversion Technology R&D $7.3 $7.0 $8.0

New engine deployment and heat transfer materials and mechanisms will insure final commercialization of dish/engine technologies in the early 1990's and central receiver technologies in the late 1990's which will allow solar thermal to be used cost-effectively throughout the U.S. as a peak-power option for utilities.

Central Receiver Research $3.2 $7.0 $8.0

Developing government/industry partnerships to commercialize this promising technology is essential. Utility-scale testing is needed to insure that large scale systems will meet utility needs.

Distributed Receiver Research $6.2 $7.0 $8.0

Systems deployment and testing of dish-engine solar thermal systems with utility participation is important to insure that scale-ups and balance of systems will meet utility and industry needs under all conditions.

Solar Thermal Storage
and Transportation Research $1.5 $2.0 $2.5

Research program to develop means whereby solar energy can be stored and transported, thereby removing major obstacles to large-scale development of solar thermal power imposed by geographic restrictions on current solar energy technologies and intermittent nature of sunlight. Successful prototype research already has been demonstrated in pilot project and can be brought to stage of commercial viability within a matter of years.

Capital Equipment $1.8 $0.0 $0.0

TOTAL... $30.0 $35.0 $41.5

WIND

FY 91 **FY 92** **FY 93**

Structural Dynamics & Fatigue Research **$3.5** **$6.0** **$8.0**

Wind systems are "fatigue machines" subjected to the uneven flow of wind. Structural problems continue in wind turbines and need to be a major research focus for the next several years. This category includes elements on fatigue, structural response, and dynamic response.

Atmospheric Fluid Dynamics **$1.5** **$1.5** **$1.5**

Research into the behavior of the wind should continue at a moderate but steady level.

Advanced Component Research **$2.0** **$4.5** **$6.5**

Keeping U.S. wind turbines competitive in the world market will require continued and increasing efforts to find strong, lightweight materials and more efficient generators and airfoils.

Advanced Hybrid Systems **$1.0** **$1.0** **$1.0**

A very large international market is believed to exist for non- utility-grid-connected systems to provide village power in developing countries. Current DOE work on wind/diesel systems should be broadened to include systems incorporating photovoltaics, storage, or some combination of the two, with particular emphasis upon systems engineering and operations and control strategies.

Cooperative Research...................................... **$2.0** **$4.0** **$6.0**

This program, under which DOE works with turbine manufacturers on research objectives of common interest, has languished in recent years due to the Reagan Administration's directive to stay away from commercialization. U.S. wind turbine manufacturers are all small companies and need an active program of this type.

Site Prospecting/Resource Assessment **$0.0** **$2.0** **$2.0**

This new program would assist interested utilities and states in evaluating their wind resources. Much more detailed wind resource information is needed in order for utilities and developers to make decisions about the economics of windfarm development.

Transmission System Evaluation **$0** **$0.5** **$0.5**

This new program would develop information on the appropriate siting of transmission lines to encourage wind energy development.

Wind . . .

Technical Assistance/ Supporting Research	**$1.0**	**$1.5**	**$2.0**

Under this program, DOE would provide technical assistance to institutional investors or buyers of wind equipment, such as foreign governments or multilateral development banks. DOE would also provide technical information on wind system capabilities to other U.S. government agencies.

TOTAL	**$11.0**	**$21.0**	**$25.5**

ASSOCIATED LINE ITEMS

	FY 91	FY 92	FY 93
International Program	$3.5	$4.5	$6.5

Supports the activities of the Committee on Renewable Energy Commerce and Trade (CORECT) export promotion programs that promote U.S. renewable energy in overseas markets. This line-item is the only international market development funding within the DOE budget for renewables.

Resource Assessment	$2.5	$3.25	$4.2

Program of federal laboratories to map and analyze renewable energy resources worldwide. Definitive resource assessment is essential for all users of renewable energy and must be increased to deal with niche markets and microclimates.

Technology Transfer	$4.5	$5.25	$7.15

This is a technical education program to transfer technical information and successes to the university community and U.S. industry. This most essential part of the R&D program has been cut back over the last eight years and needs rebuilding. Federal research is useless if the results cannot be effectively disseminated.

Capital Equipment	$7.9	$8.2	$8.5

The federal laboratories have not been able to expand and upgrade equipment significantly in the last eight years. Aside from hindering the ability to do research, the industry is drifting to overseas federal labs which may cause the U.S. to loose technology. The Solar Energy Research Institute (SERI) currently leases office space and needs a new building, which will save money in the long term.

Solar Program Support	$2.0	$2.5	$3.0

The Analytic Studies Program of the Solar Energy Research Institute supports the long-range planning of the overall renewable energy program. This is accomplished through the development of analytic studies regarding relevant aspects, present and projected, of energy market competition. These studies enhance the awareness of competitive factors that will bear on the eventual success of the renewable technologies in the marketplace.

TOTAL	$20.4	$23.7	$29.4

SUMMARY FOR ALL LINE-ITEMS

	FY 91	FY 92	FY 93
Joint Initiatives	$64.4	$69.2	$76.4
Biofuels	$32.5	$37.5	$42.0
Geothermal	$40.7	$38.7	$37.7
Hydrogen	$ 5.0	$ 6.0	$ 7.5
Hydropower	$ 5.5	$ 8.0	$ 3.5
Photovoltaics	$48.0	$58.0	$67.5
Solar Buildings	$12.5	$14.4	$19.7
Solar Thermal	$30.0	$35.0	$41.5
Wind	$11.0	$21.0	$25.5
Associated Line Items	$20.4	$23.7	$29.4
TOTAL	$270.0	$311.5	$350.7

ENDNOTES

[1] Poll sponsored by the Union of Concerned Scientists and Communications Consortium, Washington D.C. (October, 1989), conducted by Research/Strategy/Management, Inc. (Washington, D.C.). Registered voters were asked which energy sources they would fund with the most amount of money and the second most amount. Sixty-nine percent of respondents would fund renewable energy or energy conservation with the most or second most amount of money. Only 29% would spend would spend the most or second most amount on nuclear energy; 24% the second most on oil and coal. Only 16% would spend the least amount on renewables or energy conservation, while 39% and 37% would spend the least amount on nuclear energy and coal and oil, respectively.

[2] Nancy Rader, et al, *Power Surge: The Status and Near-Term Potential of Renewable Energy Technologies*, Public Citizen's Critical Mass Energy Project (May 1989), Washington, D.C. Also see Michael Brower, *Cool Energy: The Renewable Solution to Global Warming*, Union of Concerned Scientists (Nov. 1989), and Christopher Flavin, Rick Piltz, Chris Nichols, *Sustainable Energy*, Renew America (Dec. 1989).

[3] Ibid.

[4] Ibid.

[5] U.S. Department of Energy, *Characterization of U.S. Energy Resources and Reserves*, p. 25-26 (June 1989), prepared for the Deputy Assistant Secretary for Renewable Energy by the Meridian Corporation under contract N. DE-AC01-86CE30844. According to this document, the "accessible resource" figure is the amount of energy production that is technically feasible, and encompasses only those portions of the total resource base that can be exploited with currently available technology or technology that will soon be available.

[6] *Renewable Energy Research and Development Outlook*, Volume 1 (Feb. 1985), p. vii, U.S. Department of Energy, Office of Conservation and Renewable Energy, Washington, DC 20585.

[7] Fred J. Sissine, Science Policy Research Division, Congressional Research Service, Library of Congress, *Renewable Energy: Federal Programs* (CRS Issue Brief, Updated June 28, 1989), p. CRS-2.

[8] Fred J. Sissine, Science Policy Research Division, Congressional Research Service, Library of Congress, *Renewable Energy: Federal Program and Congressional Interest* (CRS Issue Brief, Updated Oct. 28, 1988), p. CRS-4, and U.S. Department of Energy, Fiscal Year 1990 Budget Highlights (Jan. 1989), Assistant Secretary, Management and Administration, Office of the Controller, Washington, DC 20585.

[9] U.S. General Accounting Office, *Energy R&D: Changes in Federal Funding Criteria and Industry Response* (Feb. 1987), p. 2, 8. (Publication number GAO/RCED-87-26.)

[10] Barbara Rosewicz and Frederick Rose, "Arco is Trying to Sell Solar-Panel Unit, Reversing Move into Alternative Energy," The Wall Street Journal (Feb. 27, 1989), p. B3.

[11] Dr. Thomas D. Bath, Manager, Analysis and Evaluation Office, Solar Energy Research Institute, "Testimony Before the U.S. Senate Committee on Energy and Natural Resources" (March 14, 1989), p. 14, Golden, CO.

[12] U.S. Department of Energy, *Guidelines for DOE Long Term Civilian Research and Development, A Report of the Energy Research Advisory Board to the U.S. Department of Energy*, Volume VI, p. 121 (December 1985, Revised April 1986), U.S. DOE, Washington, D.C. 20585 (Order No. DOE/S-0044).

APPENDIX

TABLE 1. Department of Energy (DOE) Energy Supply R&D Funding: FY 1980 To FY 1990 ($ Millions, 1982 Constant)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87	FY 88	FY 89	FY 90
Clean Coal	0.0	0.0	0.0	0.0	0.0	0.0	85.7	126.1	163.6	150.3	343.6
Fossil Energy	864.6	983.4	181.1	213.1	256.4	268.0	274.2	251.0	285.8	301.2	322.3
Nuclear Fission	1,294.9	1,209.3	1,062.7	815.0	700.7	530.5	514.6	511.9	478.8	482.0	455.1
Nuclear Fusion	496.0	448.7	432.7	452.3	430.2	384.9	315.5	292.2	275.2	264.8	252.6
Conservation	405.6	322.0	87.2	108.1	140.7	156.9	144.4	133.1	126.7	128.7	147.6
Renewables	847.9	759.7	275.0	244.4	191.3	179.8	148.5	123.1	96.7	91.4	86.4

TABLE 2. Department of Energy (DOE) Energy Supply R&D Funding: FY 1980 To FY 1990 ($ Millions, Current)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87	FY 88	FY 89	FY 90
Clean Coal	0.0	0.0	0.0	0.0	0.0	0.0	98.2	149.1	199.1	190.0	450.0
Fossil Energy	732.7	916.6	181.1	222.1	277.4	298.9	314.2	296.8	347.9	380.6	422.1
Nuclear Fission	1,097.3	1,127.2	1,062.7	849.5	758.1	600.6	589.6	605.3	582.8	609.1	595.9
Nuclear Fusion	420.3	418.2	432.7	471.4	465.4	429.3	361.5	345.5	335.0	334.7	330.8
Conservation	343.7	300.1	87.2	112.7	152.2	175.0	165.5	157.4	154.2	162.6	193.3
Renewables	718.5	708.1	275.0	254.7	207.0	200.5	170.2	145.5	117.7	115.5	113.1

Source: Congressional Research Service, CRS Issue Brief IB87140 and House Bills H.R. 2696 & 2788

TUESDAY, APRIL 3, 1990.

INTEGRAL FAST REACTOR PROGRAM AND 7 GEV ADVANCED PHOTON SOURCE

WITNESSES

HON. HARRIS W. FAWELL, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ILLINOIS

HON. RICHARD STALLINGS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF IDAHO

Mr. BEVILL. Next we have our good friends and colleagues, Congressman Harris Fawell and Congressman Richard Stallings. The Chair will recognize both of you. You can talk at the same time.

Mr. STALLINGS. We will speak together. We will be able to sort it out, I'm sure.

Mr. BEVILL. When you finish with the first one, I notice you also follow on with Idaho projects, so if you want to, just take up from there.

Mr. STALLINGS. Okay.

Mr. FAWELL. Mr. Chairman and Congresswoman Smith, I thank you for the opportunity to testify before you today. I have a prepared written statement, which I will briefly summarize.

I am here to testify in support of two programs that I believe are essential to our nation's competitiveness and energy security.

The first is the 7-GeV Advanced Photon Source. As the world's most powerful source of X-rays, the APS will make immediate and direct contributions to our nation's competitiveness. Industries expected to use the APS and benefit directly from its research include petroleum, chemicals, semiconductors, medicine, coal, steel, and many others.

The promise of the APS has not been lost on the Europeans and the Japanese, who are already moving ahead with their own plans to construct similar facilities upon U.S. technology.

The Department of Energy has requested $75 million for the project which represents the minimum level of funding needed to keep the APS on schedule for completion in 1996.

In order to meet the challenges presented by our competitors, APS management has proposed an optimized construction schedule that would allow the APS to be completed in 1995, at the same time as the Europeans and one year ahead of the Japanese. Moving to an optimized schedule would require an additional $45.6 million in fiscal year 1991 and $47.1 million in fiscal year 1992, but would not increase the total cost of the project. If we wish to remain competitive across a broad range of industries, we simply cannot afford to lose this race and allow the Europeans and the Japanese to move out ahead of us.

The second program for which I would like to express my support is the Integral Fast Reactor (IFR) Program. The IFR concept is more advanced than conventional nuclear reactor designs. It is passively safe, simpler, and more economical than current light water reactor designs. In addition, its unique fuel reprocessing features offers a way out of the nuclear waste disposal problem that continue to plague us. All of these factors combine to make the IFR a realistic solution to our growing demand for electricity.

The IFR's progress is now threatened by another proposed budget cut. Its operations budget sustained a $10 million cut in fiscal year 1990, which caused cancellations of important safety experiments and R&D. The administration is now asking that the IFR's R&D budget be cut by another $9 million. This cut would devastate the IFR program.

An increase of $17.1 million over the administration's request for the IFR R&D budget is necessary. Without an increase in funding, the project could lose 120 scientists and engineers and with them a great deal of critical technology.

The integral fast reactor and the advanced photon source are two research programs that offer realistic and immediate answers to some of our nation's most pressing problems. Your support for these two programs will put us on track toward a cleaner, safer, and more competitive future for our nation.

Again, I thank you for the opportunity to appear before you today.

[The statement of Hon. Harris W. Fawell follows:]

STATEMENT OF THE HONORABLE HARRIS W. FAWELL
To the Appropriations Subcommittee on Energy and Water Development
April 3, 1990

Mr. Chairman, Congressman Myers, and Members of the Subcommittee, thank you for the opportunity to testify before you today in support of two programs I believe are essential to our nation's competitiveness and enegry security.

The first is the 7-GeV Advanced Photon Source (APS), a synchrotron radiation facility to be constructed at Argonne National Laboratory. As the world's most powerful source of x-rays, the APS will be an invaluable tool for a braod range of industrial and scientific research. The APS will be available to scientists from private industry, universities, and other national laboratories for projects in biotechnology, chemistry, medicine, and the geosciences. The impact of this research on our nation's competitiveness will be immediate and direct. The industries expected to benefit directly from the APS include aeronautics, oil and oil products, pharmaceuticals, semiconductors, coal, steel, and many others. Because of the immediate benefits the APS will provide, U.S. industries have been more actively involved in its design and planning than in any other Department of Energy facility.

The APS is now staffed by 165 scientists, engineers, technicians, and support personnel, nearly half of the anticipated total once operation begins. Several exhaustive preconstruction technical reviews by the DOE Office of Engineering Research have been completed and contracts with architectural/engineering and construction management firms have been signed. Groundbreaking is scheduled for this spring.

The promise of the APS has not been lost on our international competitors, who are already moving ahead with their own plans to construct similar synchrotron radiation facilities. Ten European nations - France, West Germany, Italy, the United Kingdom, Spain, Switzerland, Denmark, Finland, Norway, and Sweden - are cooperating on the construction and operation of the European Synchrotron Radiation Facility (ESRF) at Grenoble. Currently under construction, the ESRF is scheduled to begin research early in the summer of 1993, over a year ahead of the APS. Our Japanese competitors, who are excellent at integrating scientific research with industrail development, have bet heavily on the potential benefits of synchrotron radiation research. The Japanese are in the midst of constructing an entire science city, Nishi Harima Technopolis, at a 5,000-acre site on a rural mountainside near Osaka. At the heart of Nishi Harime Technopolis is SPring-8, Japan's Super Photon Ring. SPring-8 will accomodate up to 82 beam lines (14 more than the APS) where experiments can be conducted utilizing high-brilliance x-ray beams. Japan's $830-million investment in synchrotron radiation research represents a per capita investment two and a half times ours.

The Department of Energy has requested $75 million for the project, which represents the minimum level of funding necessary to keep construction of the APS on its current schedule. In order to meet the challenges presented by the Europeans and the Japanese, APS management has proposed an optimized construction schedule that will allow our research to begin at the same time as the Europeans and one year ahead of the Japanese. By increasing funding by $45.6 million in FY 91 and $47.1 million in FY 92, the program's schedule can be shortened by one year. These increases are, in effect, advanced from planned FY 94, FY 95, and FY 96 requests so that there is no impact on the total estimated cost of $456 million. If we wish to remain competitive in a broad range of industries, we simply cannot afford to lose this race to the Europeans and the Japanese.

Equally important to our nation's future is the development of alternative energy sources to guarantee our energy security. The most promising energy technology, in my mind, is the **Integral Fast Reactor (IFR)**, now under development at Argonne National Laboratory. The IFR program promises a long-term energy source that does not add CO2 to the atmosphere, incorporates passive safety features, and offers a solution to the problem of nuclear waste. The Department of Energy has called the IFR "the centerpiece of (DOE's) advanced reactor program."

There are three basic elements unique to the IFR concept: a liquid-sodium cooling pool, metallic uranium fuel rods, and an on-site fuel reprocessing facility. The core of the IFR is immersed in several thousand gallons of liquid sodium, which is more effective at conducting heat away from the reactor than the light water used in conventional reactors. Similarly, the IFR's metallic uranium fuel rods transfer heat more efficiently than the uranium-oxide fuels currently in use. Together, the liquid-sodium pool and the metallic fuel rods guarantee that the reactor cannot overheat, even if the coolant should stop flowing through the core. The result is a "passively safe" reactor that cannot melt down, even under the worst circumstances.

On-site reprocessing is a unique feature of IFR. Used fuel can be removed from the reactor, reprocessed to remove useful materials, refabricated into new fuel rods, and then returned to the reactor core - all by remote control. IFR reprocessing enables practical actinide recycling, which reduces the effective lifetime of high-level nuclear waste from millions of years to a few hundred years. The IFR is also an effective burner of actinides generated in Light Water Reactors. In burning the actinides, including plutonium, the IFR can extend uranium resources by a hundred-fold, making nuclear energy the same as a renewable energy source.

The IFR program has made tremendous progress over the last several years. The University of Chicago's Special Committee for the Integral Fast Reactor recently reviewed the past six years of progress on the IFR program. The Committee concluded that "the cost of developing the IFR to a state of readiness is small compared to the benefits of having an assured, uninterrupted supply of electricity at predictable cost."

The IFR's progress is now threatened by proposed budget cuts. The Department of Energy's proposal to cut the IFR's Advanced Reactor R&D budget by $9.0 million - after being cut by $10 million in FY 90 - would drastically impede the progress of the program. An increase of $17.1 million over the Administration's request for the IFR R&D budget is absolutely essential if the program is to move forward.

The Advanced Photon Source and the Integral Fast Reactor are two research programs offering realistic and immediate answers to some of our nation's most pressing problems. The IFR's characteristics - inherent passive safety, a solution to the problem of long-term high-level waste disposal, and a large energy supply capability - make it a true next generation reactor that will allow us to rely on nuclear energy for centuries rather than decades. The APS, in turn, will contribute to the ability of American industry to stay at the cutting edge of research and technological development. Your support for these two programs will put America on track toward a cleaner, safer, and more competitive future.

Thank you for your time and your consideration of these programs.

FUNDING REQUEST FOR ARGONNE NATIONAL LABORATORY

The Integral Fast Reactor
(in millions of dollars)

	FY 1990	FY 1991 Administration	FY 1991 ANL Request
Advanced Reactor R&D	19.0	10.0	27.1
Japanese Contribution	6.0	4.0	4.0
Facilities	65.9	76.9	76.9
TOTAL	90.9	90.9	108.0

Advanced Photon Source
(in millions of dollars)

	FY 1990	FY 1991 Administration	FY 1991 ANL Request
Operating Expenses	11.5	17.0	18.3
Construction	40.0	75.0	121.5
TOTAL	51.5	92.0	139.8

Mr. **Stallings.** Let me just associate my comments with what my colleague from Illinois, Mr. Fawell, has said. I appreciate this opportunity to be with you today, and I agree with his comments and strongly support continued development of the IFR concept.

Unfortunately, the budget is $17.1 million short of what is needed to keep that program on track. Mr. Chairman, let me just make one point. It concerns me the continued inability of the Energy Department to provide adequate and stable funding for its premier civilian advanced reactor program, the IFR.

The combination of safety properties, fuel efficiency and waste improvements add up to an exciting revolutionary reactor program. The program has all the right characteristics. The IFR will usher in a new era of reactor safety, which is essential in regaining and keeping public confidence.

It can breed its own fuel, thereby allowing development of enough reactors to actually make a difference in global warming. Finally, the IFR represents what may turn out to be a real breakthrough in nuclear waste by recycling and consuming the very long-lived elements in that waste.

DOE knows all this. In fact, officials have stated in the past the IFR is the centerpiece of the nation's civilian reactor R&D program, yet the agency continues to submit a budget that would bring the program to a halt.

Mr. Chairman, your past support of this program has been essential. The IFR deserves more of that support. I ask the committee to provide an additional $17.1 million for this promising and absolutely essential program.

Mr. **Bevill.** Thank you both very much for good presentations.

[The statement of Hon. Richard H. Stallings follows:]

Statement of the
Honorable Richard H. Stallings

Subcommittee on Energy and Water Development
House Committee on Appropriations
Integral Fast Reactor Program

Mr. Chairman and members of the Subcommittee. I appreciate the opportunity to share the witness table with my friend and colleague from Illinois. He has shared with you a very convincing and important story regarding the Integral Fast Reactor program.

I agree with his comments and strongly support continued development of the IFR concept. Unfortunately, the budget is $17.1 million short of what is needed to keep the program on track.

Mr. Chairman, I have one key point that I wish to make today. It concerns the continued inability of the Energy Department to provide adequate and stable funding for its premier civilian advanced reactor program, the IFR.

The combination of safety properties, fuel efficiency, and waste improvements add up to an exciting and revolutionary reactor program. The program has all of the right characteristics.

The IFR will usher in a new era of reactor safety, which is essential in regaining and keeping public confidence. It can breed its own fuel, thereby allowing development of enough reactors to actually make a difference in global warming.

And finally, the IFR represents what may turn out to be a real breakthrough in nuclear waste, by recyling and consuming the very long-lived elements in the waste.

DOE knows all of this. In fact, officials have stated in the past that the IFR is the centerpiece of the nation's civilian reactor R & D program. Yet, the agency continues to submit a budget that would bring the program to a halt.

Mr. Chairman, the IFR deserves to be fully funded. I ask the Committee to provide an additional $17.1 million for this promising reactor program.

TUESDAY, APRIL 3, 1990.

BORON NEUTRON CAPTURE THERAPY

WITNESSES

HON. RICHARD STALLINGS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF IDAHO

HON. JOHN M. SPRATT, JR., A REPRESENTATIVE IN CONGRESS FROM THE STATE OF SOUTH CAROLINA

DR. RONALD V. DORN III, MOUNTAIN STATES TUMOR INSTITUTE

PATRICIA JENNINGS, SALT LAKE CITY, UT

Mr. BEVILL. I see our good friend and colleague, Congressman Spratt.

Mr. STALLINGS. Well, Congressman Spratt is going to join me because he is very familiar with the next thing I am going to talk about.

I would like to have Congressman Spratt, Dr. Dorn and Patricia Jennings come up and join me at the table.

Mr. BEVILL. All right. All of your prepared statements will be made a part of the record, and I'm sorry we have to limit you all to five minutes, but we are having to do that. We have to do it every year to finish.

Mr. STALLINGS. I understand, Mr. Chairman.

Mr. BEVILL. If you will just summarize—or however you wish to present it.

Mr. STALLINGS. I will make a very brief statement, then I will turn it over to these other folks who have some tremendous information that you and your committee need to be aware of.

The program I am talking about at this point and that I feel so very strongly about is called the Boron Neutron Capture Therapy, or BNCT, and would use an idle nuclear reactor at the Idaho National Engineering Laboratory to treat patients with a deadly, incurable brain tumor.

My request involves a sense of urgency. This form of cancer kills more than 5,000 people per year in the U.S. Other medical treatments, such as surgery, radiation, and chemotherapy do not work. The project requires $13.5 million in fiscal year 1991 for reactor modification, animal treatment studies and supporting technology development. Unfortunately, the President's request had no money for continued research. Mr. Chairman, I urge you to continue your support for this project and to provide the needed $13.5 million.

Mr. Chairman, it gives me pleasure to introduce two special guests who have traveled a long distance to be with me today. They will share a very personal and compelling story that truly demonstrates the importance of the BNCT program.

Dr. Ronald Dorn, from Boise, Idaho, is the principal investigator of the BNCT research program. Mrs. Patricia Jennings, of Salt Lake City, has been treated for her brain tumor in Japan by a very primitive form of this program and is walking testimony that the process does work.

Dr. Dorn, would you like to go first?

[The statement of Hon. Richard H. Stallings follows:]

HONORABLE RICHARD H. STALLINGS

Statement Before
Subcommittee on Energy and Water Development
House Committee on Appropriations

Mr. Chairman and members of the Subcommittee. I appreciate the opportunity to testify before you today on an important medical research program of vital importance to me and to the people of this country.

WHAT IS BNCT?

Scientists and doctors, exploring one of the oldest ideas in nuclear medicine, see a challenging new opportunity for treating patients with deadly, incurable brain tumors. A powerful cancer treatment, known as Boron Neutron Capture Therapy (BNCT), offers us that exciting and promising opportunity.

The BNCT program would use an idle nuclear test reactor located at the Idaho National Engineering Laboratory (INEL) to treat a fatal type of brain cancer known as Glioblastoma Multiforme. The disease kills more than 5,000 people per year in the United States alone.

The process basically involves delivering a boron compound to the brain tumor by any of several techniques and activating the boron by means of an external neutron source.

There are three components necessary for the success of BNCT: (1) a nontoxic, nonradioactive boron compound, (2) selective assimilation of the boron compound into the tumorous cells, and (3) boron compound activation by neutrons with a velocity adequate for penetration to the depth of the tumor.

PROGRAM DESERVES FINANCIAL SUPPORT

Mr. Chairman, my request today involves a sense of urgency. The BNCT research program, funded by the Department of Energy's Office of Health and Environmental Research, is at a critical crossroads. The medical project has the potential to save the lives of over 70,000 Americans who now die each year of brain cancer.

This program requires funding of approximately $13.5 million in Fiscal Year 1991. The money would be used for reactor modification, animal treatment studies, and supporting technology activities. When the President submitted his budget last February, it only included $3.0 million to keep the reactor in standby. The budget proposal, unfortunately, did not earmark any money for continued BNCT research at the INEL.

I am deeply disappointed and disturbed that the Administration failed to include money for this program at its most critical stage. During my three terms in the Congress, I cannot think of any other project that deserves our support more than this worthwhile cancer treatment initiative.

We have fought an uphill battle to convince the skeptics that this cancer treatment could work. I have supported and promoted the BNCT program since it began back in 1985. It has become one of my top priorities. Mr. Chairman, I urge this Subcommittee to fully support this vital project and provide an additional $10.5 million to keep the program alive.

In past years, the BNCT program has enjoyed and depended on support from this Subcommittee. If the government's financial support remains in place and the research program continues to produce positive results, therapy for Glioblastoma Multiforme, and possibly other types of tumors, may be no more than four years away.

THE POWER BURST FACILITY

The unused test reactor, called the Power Burst Facility (PBF), could emerge as a world center for treating this inoperable form of brain cancer. The reactor, the only one of its kind in the world, can provide the ideal neutron beam needed to treat the deadly tumors.

No one challenges or questions the fact that the Idaho facility is the best existing reactor in the world for the therapy. It can release large numbers of neutrons at just the right speed to activate an injected boron compound that, in turn, would release its energy to destroy the cancer cells.

The Power Burst Facility has completed its original mission, is available, and currently requires about $3.0 million per year for standby surveillance. These high standby costs prompt immediate conversion for BNCT application. It is estimated that a replacement facility equivalent to the reactor would exceed $250 million today and would require more than ten years to put such a facility into use.

The PBF reactor has faced an uncertain future since the nuclear fuel tests it was used for ended nearly five years ago. Without a project of this kind, it probably would have been decontaminated and torn down. The land it sits on would have been returned to sagebrush.

Defueling, decontamination, and documentation required for PBF's acceptance into the Department of Energy surplus facilities program will cost as much as $20 million. Decommissioning will cost as much as $50 million more, if the plant site is returned to its original state. Altogether, a staggering $70 million.

In this tight budget environment, it makes sense to utilize an existing reactor rather than tear it down and build a new facility at enormous costs to the taxpayer.

THE RESEARCH EFFORT

The large number of highly-specialized disciplines involved in this program necessitates a carefully planned strategy to identify and coordinate all of the required tasks.

A comprehensive plan has been prepared and approved by peer review. A research team of leading medical and scientific experts has been assembled and is working closely together on this project. The research results have been very exciting and have shown tremendous progress in recent years.

Current research utilizes another low-powered, government-owned reactor (Brookhaven Medical Research Reactor) located at the Brookhaven National Laboratory in New York. This reactor has been modified to provide neutrons adequate for animal research.

Researchers from Washington State University have used the Brookhaven reactor to treat dogs with naturally-occurring brain tumors, similar to those found in man. These researchers have demonstrated that BNCT can be safely administered and that, even at low doses, it results in dramatic tumor response.

Use of the PBF reactor, however, would allow much higher tumor doses and destruction of deep-seated human tumors.

THE BRAIN CANCER PROBLEM

Brain cancer kills thousands of people in this country each year. It is particularly difficult to treat. There is currently no viable treatment, available within the United States, for patients with the most severe form of brain tumor - Glioblastoma Multiforme.

With the best medical treatment available, patients generally live less than one year after diagnosis. Other traditional treatments such as surgery, radiation, and chemotherapy have not worked and cannot work.

HUMAN TREATMENT

What will this program cost and how long will it take to begin human treatment? Four years from now, the cancer program expects to begin human clinical trials with approximately 50 patients.

The physicians that will treat these first patients and a regional medical center are contributing their services to the program without charge. This represents a private and corporate contribution in excess of $1 million.

It is anticipated that the human clinical trials will prove that the therapy can be provided on an outpatient basis and provide a dramatic improvement over present day treatment methods. If this success is demonstrated, it is expected that the PBF operation for brain tumor therapy will become self-sustaining from revenues for patient treatment at a cost which is below present chemotherapy/ radiation treatment costs.

BNCT PROGRAM ENJOYS NATIONAL SUPPORT

Mr. Chairman, my written statement includes a list of the Biomedical Advisory Committee, a budget table outlining the program's funding needs, a life history of the PBF reactor, and a list of organizations with programs in support of the BNCT program.

The cancer program enjoys strong support from both the medical and scientific community. At this time, Mr. Chairman, I would like to share with the Subcommittee letters of endorsement and support from many national medical leaders and scientists who are familiar with this worthwhile program. I would ask that they be made part of the record for the Subcommittee's review and information.

I believe the BNCT program is cost-effective, has shown tremendous progress in recent years, and offers hope to thousands of people who are suffering from this deadly disease. This Subcommittee, Mr. Chairman, has been very supportive of the program in the past. I only ask that you continue this commitment by providing the small amount of money required for the necessary research and reactor modifications.

Nuclear energy can be a dangerous and terrifying tool in the minds of many Americans. The promise of this cancer treatment program could allow this nuclear energy to be a tremendous power for good, saving the lives of many. It is not often that we can provide a humanitarian service and save the taxpayers' money at the same time.

CLOSING COMMENTS

We have the chance to provide the final element required to treat this brain cancer by utilizing a government-owned nuclear facility at a price that is significantly less than the cost of the reactor's decontamination and decommissioning.

Your consideration and support of this request is deeply appreciated. At this time, Mr. Chairman, I would like to introduce two people who have traveled a long distance to share with the Subcommittee their firsthand knowledge and experience with the BNCT program.

Dr. Ronald V. Dorn, III, is a radiation oncologist at the Mountain States Tumor Institute in Boise, Idaho, and serves as the principal investigator of the BNCT research program. Mrs. Patricia Jennings, Salt Lake City, who has been treated for her brain tumor in Japan by a primitive form of BNCT also has a special story to tell.

APPENDIX A

INEL PBF/BNCT PROGRAM
BIOMEDICAL ADVISORY COMMITTEE

William H. Sweet, M.D., D.Sc., D.H.C., F.A.C.S. Chairman	Neurosurgeon, Basic Biomedical-BNCT Research	Massachusetts General Hospital Boston, MA
Edward L. Alpen, Ph.D.	Biophysics	University of California Berkeley, CA
Victor P. Bond, M.D., Ph.D.	Radiobiology, Clinical Aspects of BNCT	Brookhaven National Lab Upton, NY
Joseph R. Castro, M.D.	Heavy Charged-Particle Radiotherapy Research	Lawrence Berkeley Lab Berkeley, CA
Ralph G. Fairchild Ph.D.	Radiobiology, Boron Analyses, Mixed-Field Dosimetry	Brookhaven National Lab Upton, NY
M. Peter Heilbrun, M.D.	Neurosurgery	University of Utah Salt Lake City, UT
Stephen B. Kahl, Ph.D.	Boron Chemistry, Compound Testing-Development, Analytical Methods Development	University of California San Francisco, CA
James A. Lake, Ph.D.	Nuclear Reactor Physics, Neutron-Gamma Shielding and Transmission	Idaho Lab (INEL) Idaho Falls, ID
Philip Rubin, Ph.D.	Radiation Oncology	University of Rochester Rochester, NY

APPENDIX B

BUDGET TABLE

Major Program Tasks and Funding Requirements

Program Task	FY90	FY91 Bush Request	FY91 Need
Supporting technology evaluations/development	$900	$ 0	$1,320
Animal treatment studies	500	0	490
Brookhaven National Lab dosimetry/spectroscopy	187	0	250
Brookhaven Medical Research Reactor costs	70	0	125
Human protocol and FDA drug approval	0	0	240
Management, boron purchase	1,261	0	1,495
Power Burst Facility modifications/technical support	696	0	1,428
Power Burst Facility operations	3,003	3,000	3,153
Power Burst Facility modification preparations	0	0	2,917
Melanoma studies	0	0	2,120
TOTAL BNCT PROGRAM	$6,617	$3,000	$13,538

*Dollar amounts are in thousands

APPENDIX C

ORGANIZATIONS WITH PROGRAMS IN SUPPORT OF BNCT

National Institute of Health National Cancer Institute	Funding boron compound researchers
Department of Energy Idaho National Engineering Lab Idaho Falls, Idaho	Clinical development and trials of required support technology; animals/humans
Health Trust, Incorporated (Eastern Idaho Regional Medical Center) Idaho Falls, Idaho	Patient care during pilot study without charge; patient referral/gathering
Department of Energy Brookhaven National Laboratory Upton, New York	Boron compound development; animal studies
Ohio State University Columbus, Ohio	Boron compound development; animal studies; boron uptake in human tumors
University of California Los Angeles, California	Boron compound development (antibodies/liposomes)
University of California San Francisco, California	Boron compound development (porphyrins/aromatic amino acids)
Washington State University Pullman, Washington	Boron uptake in and treatment of spontaneous dog brain tumors; radiation dose evaluation/tolerance
University of Washington Seattle, Washington	Development of magnetic resonance, in-situ location/quantification of boron
Callery Chemical Company Pittsburgh, Pennsylvania	Commercial supply of boron compounds
State Hospital of New York Stony Brook, New York	Clinical assessment of BNCT for malignant melanoma

APPENDIX D

HISTORY OF POWER BURST FACILITY (PBF)

The PBF is a unique nuclear test reactor located at the Idaho National Engineering Laboratory. The reactor was authorized by Congress in 1964, construction initiated in 1965, and nuclear criticality achieved on September 22, 1972. The design and construction costs of PBF were about $60 million at that time. It is estimated that replacement cost would exceed $250 million today.

The reactor was constructed to provide experimental data on nuclear fuel rods for the Atomic Energy Commission's light water reactor program. With the Energy Reorganization Act of 1976, the Energy Research and Development Administration, later Department of Energy, was made responsible for the facility.

The Nuclear Regulatory Commission (NRC) was given responsibility for the fuel testing program conducted at PBF. During the period 1973 to 1985, the NRC sponsored over 40 fuel tests as part of its light water safety research program. With successful completion of the NRC testing mission in 1985, the reactor was placed on standby status.

Because of the relatively high velocity of the neutrons, and its inefficient neutron reflector, PBF is ideally suited to produce the epithermal neutron beam required to conduct medical research for treatment of brain cancer (Glioblastoma Multiforme) using Boron Neutron Capture Therapy.

Dr. **Dorn**. Thank you, Congressman Stallings.

Mr. Chairman, to summarize my written testimony, as a physician specializing in cancer medicine, I, on a daily basis, care for patients with incurable cancer as well as their families, examples that in spite of much important research and some hard fought progress, cancer remains the second leading cause of death in the United States.

The reason is we all too often cannot deliver enough treatment to eradicate all the cancer without causing lethal injury to the patient. One attempt to address this problem, we have been directing research into a new type of cancer treatment that offers exciting promise. That is Boron Neutron Capture Therapy.

BNCT involves depositing a boron containing compound into the cancer cells, but not into the normal cells and then activating the boron with a low energy neutron radiation. This combination of nontoxic components releases lethal radiation specifically limited to the cancer cells.

Research by our group at Idaho National Engineering Laboratories and others throughout the world has shown that the basic concept is sound and that it does, in fact, work. As a result, large cooperative groups of hospitals and universities in Europe, Japan, and Australia are now or soon will be treating patients with this treatment, but unfortunately, they can only treat cancers on the surface of the body or through an open surgical wound.

The application and investigation of this exciting treatment modality, the ability to offer this treatment to large numbers of otherwise incurable patients now lies in the need to be able to reach and treat the lethal cancers that lie deep in the body, and the only neutron source that will allow us to treat these clinically significant deep cancers is the Power Burst Facility reactor at INEL.

I am here today to suggest to you that the time has come and the need is now to fund the necessary modifications to this reactor so that we may pursue this promising research. I would like to introduce Mrs. Patricia Jennings, a patient who because the treatment was unavailable in the United States three years ago, went to Japan to receive BNCT treatment for her otherwise incurable, malignant brain tumor.

This was three years ago. Her very presence here today, the tale of her ordeal addresses far more emphatically than I ever can the need for this reactor.

[The statement of Dr. Dorn follows:]

RONALD V. DORN, III, M.D.
Testimony Before
Subcommittee on Energy and Water Development
House Committee on Appropriations

Mr. Chairman and distinguished members of the Committee. I appreciate very much the opportunity to discuss with you a promising and exciting new cancer treatment and the need to rapidly move forward so as to offer this treatment to patients with incurable tumors. This treatment is called Boron Neutron Capture Therapy (BNCT) and investigation of its safe application to lethal tumors, deep in the human body, requires immediate modification and use of the Power Burst Facility (PBF) reactor at the Idaho National Engineering Laboratory (INEL).

THE CANCER PROBLEM

Cancer is the leading cause of death in the United States today, and the numbers continue to increase yearly. Advances in cancer treatment have resulted in some increase in cure rates. The frustrating reality remains, however, that tens of thousands of patients with particularly lethal cancers (including Glioblastoma Multiforme brain tumors, metastatic malignant melanomas, etc.) continue to die yearly in spite of the annual expenditure of hundreds of millions of dollars on investigative chemotherapy, immunotherapy, etc. As a practicing clinician, I see patients every week who have tumors I know will not be curable and who will not have a significantly extended, high-quality life in spite of my best efforts. In the face of such a reality, while awaiting the final "cure" or prevention of all cancer (far in the future), the exciting potential of BNCT must be pursued and optimized. Studies already completed convince me that BNCT can be safely used and that, for some tumors, it will be better than anything else I can offer.

BORON NEUTRON CAPTURE THERAPY (BNCT)

When modern cancer treatment fails to cure the patient, the problem lies in the inability to deliver enough of the treatment to kill all of the cancer without causing lethal injury to the patient. Accordingly, recent efforts in cancer treatment research have been directed toward biologically specific treatment (i.e., the use of "biologic modifiers" to assist in "targeting" the treatment to the cancer cells and diverting it away from the normal tissue). BNCT offers a particularly promising, tumor-specific, "targeted" treatment. In BNCT, boron is attached to a tumor-seeking carrier and deposited via the bloodstream into the cancer cells (but not normal cells). The tumor is then exposed to a very low-energy neutron radiation. Neither the boron carrier nor the neutrons do significant tissue damage. However, while the neutron is captured by a boron atom, it releases highly lethal radiation limited to the boron containing tumor cells. Increasing selective "boron carriers" and radiation sources producing "purer" beams of these low-energy neutrons improve the productivity of this treatment. (Unlike other biologically targeted cancer treatments currently under investigation, the "cancer-lethal" toxic compound is not circulated through the entire body, but is produced only at the treatment site, thereby sparing the blood cleansing organs and bone marrow that are damaged by chemotherapeutic drugs.) While, as in any investigative treatment, there is no guarantee that BNCT will become a valuable cancer treatment, preclinical technology development, efficacy studies, and safety studies in our program and others have progressed to the point where comprehensive human studies can be safely undertaken. Proceeding with such studies in clinically significant, lethal, deep-seated human cancers requires the immediate modification and use of the PBF reactor at the INEL. No other neutron source in the world can provide such large quantities nor such a pure beam of neutrons having the desired energy.

CURRENT STATUS-BNCT RESEARCH

Basic Science/Technology: The last few years have seen rapid progress in the understanding of the BNCT process and in the technology vital to its application. Within our own PBF/BNCT research program, the following technologies in support of BNCT have been developed:

1. Boron concentration analysis in small tissue samples.
2. Boron compound purity assessment.
3. Noninvasive magnetic resonance (MR)-based analysis of boron tumor localization and concentration.
4. Neutron source dosimetry (dose measurement).
5. BNCT three-dimensional dose calculation, analysis, and image display to aid the treating physician in selecting optimum beam parameters and local shielding placement.

Many of these tools are already in use by the international BNCT community. Both our group and the Japanese have completed initial feasibility and design studies for deployable BNCT neutron sources.

Biology/Clinical Studies: Numerous studies by many groups have demonstrated that BNCT does, in fact, kill cancer cells and shrink tumors in tissue cultures and in animals, and that it does so with 2-3 times the efficacy of conventional x-rays. Within our group, Dr. Patrick Gavin and his colleagues at Washington State University have thoroughly studied boron compound distribution (pharmacokinetics) and normal tissue BNCT tolerance in animals, and have safely demonstrated dramatic tumor shrinkage in dogs with spontaneous brain tumors with just one treatment. A large European consortium (11 countries, more than 30 universities) is currently studying boron compound distribution in human patients with brain tumors and is preparing a reactor for the initiation of human cancer BNCT treatment within the next 1-2 years. Dr. Hatanaka in Japan has successfully treated and cured some patients with malignant brain tumors with BNCT (including a patient from the U.S. who is appearing before this committee today and who was unable to receive this treatment in the U.S.). Dr. Mishima, also from Japan, has now demonstrated multiple cases of complete local control of superficial malignant melanoma using BNCT.

Boron Chemistry/Compound Development: The aforementioned experimental studies are being carried out successfully with currently available boron compounds, including borocaptate sodium (BSH), p-boronophenylalanine (p-BPA) and boronated thiouracil. Meanwhile, considerable worldwide activity is underway toward the development of new and more effective boron compounds (boronated porphorins, boronated liposomes, boron-antibody complexes, boron-hormone complexes, etc.). These new compounds will allow potential treatment of many types of cancer and improved BNCT specificity and efficacy.

In summary, a comprehensive scientific and technological basis has been established for the safe clinical application of BNCT to cancer patients within the framework of controlled clinical trials. To withhold this potentially curative treatment from patients with otherwise incurable cancers while awaiting further treatment "optimization" or "refinement" is inappropriate (e.g. conventional radiation therapy has cured many cancer patients since the early part of this century, but is still being "optimized"; chemotherapy has helped numerous cancer patients over the past 30-40 years, yet continues to be intensively "refined" and new drugs developed with little to show in the way of cures. Hundreds of thousands of patients have benefited from the less-than-perfect treatment modalities while the modalities have continued to evolve.) It is time to bring BNCT into the "war on cancer".

BNCT HUMAN CANCER TREATMENT - FUNDING AND PROGRAM REQUIREMENTS

The following three steps are necessary to fully investigate BNCT treatment in patients with cancer (with only a modest investment relative to overall cancer research):

1. Fund and immediately begin modifications to the PBF reactor at the INEL. The fact of the matter is (the "physics" of the matter is) that the clinically significant, lethal human cancers lie deep in the body and the only neutron source that will deliver an adequate dose to most of these tumors (and allow optimization of dose delivery) is the PBF reactor. Additionally, the PBF neutron beam will be intense enough to allow for greater numbers of treatments to be delivered within a specific timeframe - more patients and more nonpatient research. Further, if BNCT proves to be a beneficial cancer treatment modality, the availability of the PBF reactor will be critical in order to develop optimum parameters for the design and deployment of BNCT treatment technology to regional cancer treatment centers. Researchers around the world have expressed a keen interest in the future availability of the PBF resource. Finally, even if we begin work on the PBF reactor immediately, it will take three years of construction before cancer patients in the U.S. will benefit from this resource; a resource already delayed by three years of expensive "stand-by".

2. Continue funding the PBF/BNCT Research Program at the INEL and begin funding the proposed INEL BNCT/Melanoma Research Program. Considerable invaluable preclinical/technological progress can be made while awaiting availability of the PBF reactor, including the establishment of a screening network for new boron compounds as they are developed.

3. Continue funding of other U.S. BNCT research programs (e.g. Brookhaven, MIT, Ohio State, UCSF, UCLA) allowing for development of new and better boron compounds, as well as continued research into BNCT effectiveness using cell cultures, small animals, and superficial tumors.

Mr. Chairman and distinguished committee members, thank you for the opportunity to review Boron Neutron Capture Therapy with you and the critical need to fund immediate modification of the PBF reactor at the INEL to provide this promising new treatment to cancer patients.

Mr. **Bevill**. We certainly want to hear you, but time is up. Could you wrap it up in about a minute?

Mrs. **Jennings**. Sure can.

I have had three craniotomies, an opening of my skull, and that has left me with some physical disability. I feel that if the facility in Idaho had been ready, and I could have gone there, I would not have this problem, but I did find out a little information about BNCT when I was searching for information.

In June of 1987 I was diagnosed with a glioblastoma and told that I had from six to 18 months to live. I searched for information and ran across some information about the BNCT in Idaho. I talked to the people there. They told me about the BNCT that was being used in Japan. And that was all, no other place in the world right now, so that if I wanted to try for a cure for my brain tumor, I would have to go to Japan, which I did.

The treatment was grueling there. It required nearly 13 hours of anesthesia to peel back by scalp as much as possible, open my cranium for debulking surgery, then treatment by the neutron beam. Since the neutron source there is weaker than what we would have available here, the neutron treatment required five hours.

In comparison, I understand that if the PBF reactor is modified, it will be possible to treat this kind of tumor without opening the cranium and requiring only a few minutes of treatment time with the neutron beam. I believe I am alive today because I took the chance with a rather primitive form of BNCT.

With full development of BNCT here, the possibilities are phenomenal. I ask that all the necessary funding be approved to continue this vital work. Thank you.

[The statement of Ms. Jennings follows:]

WRITTEN TESTIMONY BY PATRICIA M. JENNINGS TO THE SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT APPROPRIATIONS

Mr. Chairman and distinguished members of the Committee, I appreciate this opportunity to present the human story of one who has been diagnosed with a fatal brain tumor and yet through BNCT has lived to tell about it.

In the spring of 1987, I was a typical, busy woman. I worked in an architectural firm and sometimes traveled in my work. I had three sons (ages 9, 11, and 13). I was involved in my sons' scout and sports activities and in my church duties. In other words, I was an ordinary person who had been basically healthy all her life; so if this could happen to me, it could happen to anyone.

I was shocked when a CT scan in June, 1987, revealed a large tumor in my brain. On June 23, surgery was performed to remove the tumor. The pathology report diagnosed the tumor as glioblastoma multiforme, Grade IV. The neurosurgeon told me that this type of tumor was basically incurable; I had approximately six to eighteen months to live. He said that with radiation and chemotherapy treatments, I could possibly have a few additional months. This type of tumor had tendrils that would continue to grow and which could not be completely removed by surgery.

My family and I talked to doctors in Salt Lake City and in other well-known medical centers across the United States and were told basically the same thing: That the recommended radiation/

chemotherapy treatment was not very effective for this type of tumor, but that was the usual course of treatment.

During this time of searching for information, my mother happened to hear through a co-worker that a treatment being used in Japan called BNCT was showing a better survival rate than other forms of treatment for this type of tumor. We obtained a copy of the paragraphs mentioning the BNCT which were printed in the April 27, 1987, issue of the "Medical Device and Diagnostic Industry Reports". Information was given on the efforts being made by people in Idaho to have the Power Burst Facility (PBF) reactor modified for use in BNCT in the United States. At that time, it was felt that if all went smoothly, humans could possibly be treated by 1990.

It is now 1990, and humans are still not being treated here. I want to do what I can to help in the efforts to make this treatment possible for the many others who will have this type of brain tumor in the future and will face the discouragement of not having an effective treatment offered here in the United States unless this work and funding are continued to develop BNCT.

In July of 1987, after evaluating my options, I decided that the BNCT being done in Japan seemed to offer some hope. I went to Japan, and the BNCT was done on August 7, 1987 (with the boron being injected the night before). Dr. Stephen Marano from the Eastern Idaho Regional Medical Center was in attendance for my treatment.

Although I was unaware of all that was happening at the time, I later learned that it required peeling my scalp back as much as possible and then opening the cranium for debulking surgery and the neutron radiation. The tumor had already doubled in size since the first surgery in June. Since Japan has a weak neutron source, the treatment with the neutron beam took five hours. Later, I also found out that I was under anesthesia for twelve hours and fifty-five minutes, with much of the time by remote anesthesia. This amount of time under anesthesia can be life threatening.

I mentioned what happened in Japan as a comparison to what is currently felt the treatment would be here after modification of the PBF and full development of BNCT. No open cranium surgery would be required, and the neutron treatment would last less than one minute. If this had been available for me, I believe I would not have had to suffer such trauma to my head and scalp and other problems.

In my case, my main problems after returning to the United States after the treatment were: (1) an intestinal bacterial infection; (2) damaged scalp; and (3) a lack of support and understanding from local medical personnel, because all of the aspects of BNCT were unknown to them.

My general health began to improve after the bacterial infection was cured, but by April of 1988, I had some swelling of my brain and had lost function of my left hand and arm.

A Positron Emissions Tomography (PET) done May 4, 1988, at the Wadsworth Medical Center in Los Angeles indicated no existence of viable tumor.

Because of my severe headaches and a scan showing brain distortion from edema, the Salt Lake City neurosurgeon removed a clump of decaying tumor on September 2, 1988.

A CT scan on December 27, 1988, showed the center line of the brain was back to normal and there was no evidence of recurring tumor.

After having three craniotomies, I experienced weakness and dysfunction of my left side, requiring several months of physical therapy. However, my mental faculties never seemed to be adversely affected.

On June 21, 1989, a CT scan showed normal brain structure and no evidence of tumor.

By August, 1989, I had lived for two years since treatment, which was a milestone considering the original prognosis.

With improved techniques and facilities here in the United States, I believe BNCT will be extremely successful. To think that it will be possible to treat patients with no open cranium surgery required and a neutron treatment of less than one minute is truly amazing.

I ask that all funding necessary be continued to make BNCT a reality here in the United States for all those people in the future who will be faced with a situation similar to mine.

Mr. STALLINGS. Mr. Chairman, again thank you for giving us the time. Congressman Spratt at some other time would like to chat with you because his father died of this very disease, and we just appreciate all the help you can give.

Mr. SPRATT. I have seen the process in Idaho. I think it has great promise. For $25 million all together we can redeem a reactor probably worth $300 million and give it a practical life in years to come and maybe have revolutionary impact on the treatment of this disease.

Mr. BEVILL. You certainly made a very strong case. I appreciate it. I am sorry to have to limit you like this on the time. Thank you.

Mr. STALLINGS. I have a few letters of support, Mr. Chairman, and if you would, I would like to put them in the record also.

Mr. BEVILL. Without objection.

[The information follows:]

**EASTERN IDAHO REGIONAL
MEDICAL CENTER** "Quality People, Quality Care"

March 30, 1990

FEDERAL EXPRESS

The Honorable Richard H. Stallings
1221 Longworth Building
Washington, D.C. 20515

Dear Representative Stallings:

Please accept this correspondence as support from Eastern Idaho Regional Medical Center and HealthTrust, Inc. -- The Hospital Company, for continued funding of the Boron-Neutron Capture Therapy (BNCT) Program. This program holds out hope for terminally ill people across the country and possibly around the world. Eastern Idaho Regional Medical Center, which is part of HealthTrust, Inc. -- The Hospital Company, which is an employee stock ownership plan company with 52% of the fully diluted stock to be owned by the employees, has been working hand-in-hand with the Department of Energy, EG&G Idaho Inc. (an INEL site contractor) and General Electric Imaging (vendor for the Magnetic Resonance Imaging unit at EIRMC) in this worthwhile research. To this research we have donated the use of our Magnetic Resonance Imaging unit that has totalled 230 hours or if being utilized for patient care, $184,000 in equivalent revenues. General Electric Imaging has upgraded our MRI for spectroscopy capabilities at no cost for this research. Spectroscopy capabilities are utilized primarily at research institutes and it is rare to have this capability at a private Medical Center. In addition, our neuroradiologist David M. Madden, M.D., estimates that he has spent 25 to 30 hours per month working with one of the researchers, Ken Bradshaw, since July of 1986. In addition, Eastern Idaho Regional Medical Center has registered and has been approved as a research facility under the Animal Welfare Act. The following members have donated their time to serve on our Animal Care and Use Committee:

*3100 Channing Way
Idaho Falls, Idaho 83404
P.O. Box 2077, 83403-2077
(208) 529-6111*

An Affiliate of
HEALTHTRUST

John Liljenquist, M.D., Chairman
M. O. Huntington, M.D.
Frank B. Finnigan, M.D.
Rulon Robison, M.D.
Teresa Sturm, J.D.
Bruce Lancaster, DVM
Reverend Robert Spencer
Rhonda Aliah-Davis, DVM
Kathleen Batdorf, DVM
Stephen Marano, M.D.
David Madden, M.D.
Ed Kinghorn, Ph.D.
Louis A. Fatkin, EIRMC Director of Risk Management

This was necessary for us to conduct imaging of rabbits at EIRMC for the research. All of the above people are members of the Idaho Falls community and supportive of this research. I believe the above information is evident that this is just not a program that is solely depending upon Government funds, but is of great interest to the medical staff, this hospital and the ownership of this hospital as a commitment to serve the needs of our community and our nation.

Furthermore, as I understand it in discussing this with Merle Griebenow, and sitting in on the quarterly meetings that we sponsor at Eastern Idaho Regional Medical Center for the research team, that Idaho Falls through the INEL is the only site in the country with this specific reactor and the specific beam necessary to perform this procedure if the research bears fruit. I believe that this would be a great service to our community and nation to continue this research and have it be successful and further the commitment of the INEL and our country towards productive use of nuclear energy.

If you have any questions or require any further information, please do not hesitate to contact me.

Sincerely,

Thomas M. Weiss
Administrator

TMW/mak

ISU
Campus Box 8288 Pocatello, ID 83209-8288 (208) 236-3475
Idaho State University
COLLEGE OF PHARMACY
Office of the Associate Dean

March 30, 1990

The Honorable Richard Stallings
United States Congressman
1221 Longworth House Office Building
Washington, DC 20515

Dear Congressman Stallings:

I support your efforts for the continued research funding for the BNCT effort at INEL. I also support your efforts to release the funds which will allow the modification of the PBF reactor for the BNCT project.

BNCT research has been funded for many years by the DOE with very little advancement. In the past few years, only with the leadership and management skills of the INEL project team, significant progress has been made. The INEL research effort has made major break-throughs in the areas of boron analysis, in-vivo imaging of boron drug, and understanding of the pharmacology and pharmacokinetics of the drugs. Their efforts in radiation dosimetry and reactor modification design are world-class. The INEL project management approach to the BNCT discipline has lead to such advancements that treatment of patients with deadly cancers is possible within the next few years.

Congressman, you are doing a very good job. Good luck with your efforts to restore BNCT funding for Idaho. If I can be of any assistance, please let me know.

Sincerely,

Bernard W. Graham, Ph.D.
Associate Dean

BWG:bs
cc: Ms. Sallee Gasser

March 27, 1990

Congressman Richard Stallings
Longworth House Office Building, 1221
Washington, D.C. 20515

Congressman Stallings,

I understand that you will be attending a meeting of the Subcommittee on Energy and Water Development in early April to request restoration of the INEL BNCT funding. I wish to strongly endorse your efforts to restore funding to this program.

The importance of this potential therapeutic modality in the treatment of brain tumors and malignant melanomas is reinforced by the fact that both Europe and Japan have organized multiorganizational efforts to pursue this line of research. Malignant melanomas, in particular, are the third most common source of cerebral metastases after carcinoma of breast and lung according to an article published in the journal *Cancer*, 61: 1926-1934, 1988.

INEL has been a focal point for a coordinated research effort on the part of numerous investigators studying this potential therapy. Through the efforts of INEL, these investigators are periodically brought together to share their results and plan new investigational strategies. Research has also shown that INEL is the only adequate neutron source available in the U.S. for this treatment though funding has not been released to permit the required modifications.

I strongly believe that discontinuing this funding will not only result in a significant delay in U.S. based research efforts in BNCT therapy but will also send a strong negative signal to our European and Asian allies regarding our commitment to this research. Additionally, elimination of the INEL funding could hinder collaborative efforts with these other research groups which might further set back the time table of this treatment method.

Again, as a scientist and concerned citizen, I strongly support your efforts at restoring funding for this vital research program.

Sincerely,

Eric J. Jarvi, Ph.D.
Associate Professor
Department of Pharmaceutical Sci.
Idaho State University

March 23, 1990

Congressman Richard Stallings
1221 Longworth
Washington, DC 20515

Dear Congressman Stallings:

I write this note to support your efforts to continue and expand funding for the National Reactor Testing Laboratory in Idaho Falls, Idaho. My particular interest in this facility lies in its enormous and unique potential for the development of a new and novel cancer therapy based on neutron capture by Boron. As you may know, the element Boron has a high avidity for neutrons, and following the capture of a neutron, decays with an alpha particle. Alpha particles travel only a very short distance in biological materials, usually less than the diameter on one cell. In this short distance, however, the alpha particle creates tremendous damage that results in the death of the penetrated cell. New techniques allow us to introduce boron into selected cell types, and hence, with neutron radiation, selectively kill these cells. It becomes obvious that this is a tool of tremendous potential for the treatment of malignancies of all kinds. My own interest extends to tumors of the pituitary gland. We have, over the past three years, perfected the technique for introducing Boron into the cells of these tumors. With the correct reactor facility, this will allow us to selectively kill these tumor cells while preserving the life and hence the function of the other cells of the pituitary gland. This promises to become the treatment of choice for tumors of the pituitary gland and could become the primary treatment for endocrine dependent tumors such as prostate cancer, the most common cancer of men.

For any of this to happen, it is essential that the proper reactor facility be available for use, first with cells and laboratory animals, subsequently with human beings. The best, and perhaps the only, suitable reactor facility for these studies is found at the Idaho site. This facility could, in my view, become a worldwide referral center for diseases amenable to Boron Neutron Capture Therapy. It would be most distressing to let this facility slip from our grasp after so much has been put into its development and maintenance, and while so many studies are underway at American medical institutions of higher learning that are counting on the availability of this facility. I can vouch that the National Institutes of Health and the Oregon Health Sciences University are two such institutions that are counting heavily on the ongoing availability of the National Reactor Testing Laboratory.

Sincerely Yours,

D. Lynn Loriaux, MD,PhD
Clinical Director
NICHD,NIH, Bethesda Md.

ISU
Campus Box 8334 • Pocatello, ID 83209-0009 • (208) 236-2682
Idaho State University
COLLEGE OF PHARMACY
Pharmaceutical Sciences

March 28, 1990

Congressman Richard Stallings
Longworth House Office Building, 1221
Washington, D.C. 20515

Dear Congressman Stallings:

I am writing this letter to request that you support continued funding for the Idaho National Engineering Laboratory (INEL) for its work on the boron neutron capture therapy of cancer. Boron neutron capture therapy (BNCT) is a unique and valuable alternative to the conventional treatment of otherwise incurable cancers. The INEL has been at the forefront of this research effort; indeed, its large animal research program has generated probably the strongest experimental evidence for the value of the BNCT concept. However, my understanding is that the INEL's work in this area is now in danger of being terminated because of a lack of funding. I believe this would be a serious mistake. The INEL research team is internationally recognized for its research on BNCT. The promise of BNCT is sufficiently great that the European research community has recently formed a multi-national team to expand upon the U.S. research findings and the National Cancer Institute is currently funding a multi- million dollar research effort aimed at developing second generation drugs for the BNCT program.

Failure to continue to fund the INEL's BNCT research team would essentially surrender the lead in this area to the European community. Granted, other U.S. research teams (Ohio-State for example) would continue to work on the BNCT concept, but it is doubtful that these teams have the critical mass of researchers or the diversity of research expertise to be able to translate the BNCT concept into a clinically useful therapy. Additionally, the Power Burst Facility at the INEL is reported to be probably the best neutron source available for BNCT type radiation therapy. Decommission of this reactor thus would result in the loss of a virtually irreplaceable national resource and would impair the clinical utilization of BNCT technology.

Although it is perhaps premature to mention this, the technology developed in support of BNCT may also open up a new area of basic neuroscience research. Establishing the clinical utility of the BNCT concept would validate the use of boron- neutron therapy as a means of selectively ablating specific chemical classes of brain cells. Ablation of chemically distinct subclasses of brain cells would provide researchers a new and powerful technique to develop animal models of human neurological diseases. Development of such animal models could, in turn, lead to major advances in health care.

In summary, the INEL research effort on BNCT represents a very real opportunity to reduce human pain and suffering. I urge you to support the continued funding of this project.

Sincerely,

TR LaHann

Thomas R. LaHann, Ph.D.
Associate Professor of Pharmacology and Toxicology

GREATER IDAHO FALLS CHAMBER OF COMMERCE

March 28, 1990

The Honorable Richard Stallings
Room 1221
Longworth House Office Building
Washington, D. C. 20515

Dear Congressman Stallings:

The Greater Idaho Falls Chamber of Commerce has a proven history of support for the Department of Energy's Idaho National Engineering Laboratory. This Chamber's members, Board of Directors and, particularly, its I.N.E.L. Committee have expressed that support through a wide range of formal and informal activities for the past 40 years.

The Chamber has been watching the progress of research in Boron Neutron Capture Therapy with interest and growing enthusiasm. We know that 5,000 people per year, in the United States alone, are diagnosed as having inoperable cancers which may respond only to this treatment. The opportunity for this community and the Department of Energy to be a part of this development is important beyond measure.

We believe it is crucial that necessary modifications to the Power Burst Facility be funded at an accelerated rate. If the progress in current research continues at its present pace, those modifications must keep pace as well.

The Greater Idaho Falls Chamber of Commerce strongly encourages your support of the Boron Neutron Capture Therapy.

Very Truly Yours,

Ira Koplow
Executive Director

IK/cf

"Your Partners In Progress"

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COLLEGE OF PHARMACY
Office of the Dean
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(208) 236-2175

ISU
ISHP
ISPA
BACK TO THE FUTURE
OF PHARMACY

March 27, 1990

The Honorable Richard Stallings
United States Representative
1221 Longworth House Office Building
Washington, DC 20515

Dear Representative Stallings:

I strongly support your request for restoration of INEL BNCT funding. As you know, this form of therapy has the potential of treating several forms of heretofore untreatable cancers. This project will aid in many other areas of medicine with the technology spinoffs.

The INEL research group has made tremendous progress in the few years of funding. The research is just now reaching its maximum potential. A critical mass of people have been assembled to tackle the enormous tasks left to be accomplished. The critical mass includes faculty from the College of Pharmacy. The College of Pharmacy currently supports an active BNCT research program and we have hired faculty in expectation of support from the INEL. To cut research funding at this time would set the Idaho, the national and the international BNCT efforts back by many years.

Thank you for all your efforts with this valuable cancer treatment method. If I can be of any assistance, please call.

Sincerely,

Arthur A. Nelson, Jr., Ph.D.
Dean

AAN:bs

cc: Ms. Sallee Gasser

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Idaho State University
Pocatello, Idaho 83209-8288

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114 Ridgeway Center
Oak Ridge, Tennessee 37830 (615) 483-1113
FAX (615) 483-3316

March 23, 1990

Congressman Richard Stallings
1221 Longworth
Washington, D.C. 20515

Dear Congressman Stallings:

I would like to express my strong support for continuation of the Boron Neutron Capture Therapy (BNCT) cancer treatment research program that is being coordinated by Merle Griebenow out of the Idaho National Engineering Laboratory (INEL). Even though I became aware of this program only last fall, as a physicist, the very significant impact BNCT could have in the treatment of cancer, was immediately clear and exciting. In addition, though the program is presently directed at a few specific cancers, I believe that this method could provide effective treatment to a wide range of cancers, especially for cases in which metastasis has occurred.

This program, to be successful, needs the expertise from a multidisciplinary team. In February, I was invited to participate in a quarterly BNCT planning meeting at INEL, and had the privilege of observing and interacting with the excellent team assembled by Merle Griebenow. I was very impressed with what Mr. Griebenow had accomplished, not only in the technical progress made by the various groups he had assembled, but more importantly, by the diversity of the group. Gathered were physicians, research veterinarians, neurosurgeons, physicists, biochemists, radiation physicists, analytical chemists and reactor engineers, talking together, understanding what the role of each group was in the overall project, and being informative without hiding behind jargon, so that all members of the team could contribute to finding solutions. I believe that this is one of the key ingredients of the program spearheaded by Griebenow at INEL: a complete team that can communicate across discipline lines, but includes all of the scientific disciplines needed to fully develop the BNCT method. This may, in fact, be one of the weaknesses of recent reviews of the BNCT program. The review teams lacked a couple key disciplines necessary for the program, missed some key technical points, and therefore did not fully appreciate the importance to the BNCT program of the team assembled at INEL.

You may wonder who we are. Atom Sciences is a small (12 person) high-tech spin-off company from Oak Ridge National Laboratory that is developing ultrasensitive analytical techniques using lasers to detect small (at the parts per billion or parts per trillion level) concentrations of pre-selected elements in all types of samples. Our technology could be used to determine the location in tumorous and healthy tissue, at the sub-cellular level, small concentrations of boron that is delivered by various pharmaceutical agents. This will enable biochemists to produce more specific pharmaceuticals that can deliver boron to specific tumor sites.

Independent of the fact that we might be participating in a small way in this program, I honestly believe the BNCT program as proposed by Griebenow of INEL is the best chance we have at making this unique cancer therapy method work! Your continued support of this outstanding multidisciplinary team could have a significant impact in saving the lives of many productive cancer victims.

I would be happy to answer any questions you may have, or discuss in more detail specific aspects of the program.

Sincerely,

Norbert Thonnard

Norbert Thonnard, Ph.D.
President

NT/jc

Office of the Mayor
City Hall
IDAHO FALLS, IDAHO 83405

THOMAS CAMPBELL
MAYOR

The Honorable Richard Stallings
Room 1221
Longworth House Office Building
Washington, D.C. 20515

Dear Congressman Stallings:

The City of Idaho Falls supports the Neutron Capture Therapy research. The opportunity for this community and the Department of Energy to be a part of a development which will help so many people is important.

We believe it is crucial that necessary modifications to the Power Burst Facility be funded at an accelerated rate. If the progress in current research continues at its present pace, those modifications must keep pace as well.

The City of Idaho Falls strongly encourages your support of the Boron Neutron Capture Therapy.

Sincerely,

Thomas V. Campbell
Mayor
City of Idaho Falls

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

BERKELEY • DAVIS • IRVINE • LOS ANGELES • RIVERSIDE • SAN DIEGO • SAN FRANCISCO SANTA BARBARA • SANTA CRUZ

SCHOOL OF PHARMACY
DEPARTMENT OF PHARMACEUTICAL CHEMISTRY

San Francisco, California 94143-0446

March 29, 1990

Honorable Congressman Richard Stallings
1221 Longworth Building
Washington, DC 20515

Dear Congressman Stallings:

I am writing to you to urge your support for the sustained development of an extremely promising and unique form of cancer chemoradiotherapy known as boron neutron capture therapy (BNCT).

BNCT is a form of binary therapy in which non-toxic, non-radioactive radiosensitizers (boron atoms) are first localized in cancerous tumor and subsequently activated by a sub-ionizing beam of low energy neutrons. This technique was first developed in the United States in the late 1950's and early 1960's but never reached its full potential as the applicable technologies (boron chemistry and neutron beams) had not sufficiently matured. Since that time, it has been used effectively in Japan for the treatment of brain cancer and, more recently, malignant melanoma. There is currently very substantial interest and support in Japan, Australia, the European Community and the Soviet Union. Given the current state of United States Government support, the day is rapidly approaching when American patients will be obliged to travel to one of these other nations to seek BNCT treatment for two of the most lethal forms of human cancer.

As you are aware, the Idaho National Engineering Laboratory is engage in a broad based program of BNCT development. I am a member of the INEL National Biomedical Advisory Board for this program and also carry out my own independent research in the development of new compounds for BNCT. The Power Burst Facility (PBF) at INEL has a neutron beam which would be ideal for treating patients, but the reactor needs to be modified so that human patients could be safely and efficiently treated. This team effort has great merit and potential, but desperately needs substantial and sustained funding, especially in the area of reactor modification. The Department of Energy must be encouraged to provide this support, and could most appropriately do so with an added appropriation from the Energy and Water Appropriations Sub-Committee. I stress this additional appropriation aspect since the current funding of beam development at Brookhaven National Laboratory and the Massachusetts Institute of Technology is not even adequate to carry out important work going on at these facilities. Given the potential benefits to human health, the amount of money necessary is miniscule. Indeed, just keeping the PBF reactor in stand-by condition for three or four years costs more than the support needed to carry out the required modifications.

May I say that from a more national perspective, I would strongly encourage the development and funding of a joint DOE-NIH ten year program to determine whether this exceptionally exciting therapeutic modality is truly suited to the treatment of American patients. Funding is desperately needed in all areas of new compound development, pre-clinical biological studies, neutron beam development and associated technologies. A few million dollars per year over the next ten years would, in my opinion, buy the American public an exceptionally effective and unique form of treatment for many of the most devastating forms of cancer. We owe it to ourselves not let this opportunity slip away.

Thank you very much for your support and concern.

Sincerely,

Stephen B. Kahl

Stephen B. Kahl, Ph.D.
Associate Professor of Chemistry
and Pharmaceutical Chemistry

SBK:al

TUESDAY, APRIL 3, 1990.

DOE R&D ACTIVITIES

COALITION OF EPSCOR STATES

WITNESS

HON. BEN ERDREICH, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ALABAMA

CHARLES A. McCALLUM, MD, PRESIDENT, UNIVERSITY OF ALABAMA AT BIRMINGHAM

PRISCILLA KILCREASE, DIRECTOR OF RESEARCH AND DEVELOPMENT, LOUISIANA BOARD OF REGENTS

Mr. BEVILL. I see our friend and colleague, Congressman Ben Erdreich back there. I know you have to get back on your busy schedule. If you will come forward, we will hear you.

Mr. ERDREICH. I appreciate, Mr. Chairman, your courtesy. It is my pleasure to introduce to you someone who needs no introduction, Dr. Charles McCallum, whom we all know as Scottie, President of the University of Alabama at Birmingham.

Dr. McCallum is an outstanding educator, administrator, and physician, whose broad experience in health and higher education has made him a most sought after authority in both fields of endeavor. He is here today to give you an overview of the EPSCOR Program to stimulate science and engineering in America, key to our competitiveness, and I hand to you our good friend, Dr. Scottie McCallum.

Mr. BEVILL. Dr. McCallum, we are pleased to have you with us today. Your reputation precedes you. We know all about you up here in Washington.

Dr. McCALLUM. You are very kind, Mr. Chairman and members of the subcommittee.

I appreciate very much the opportunity to testify before you today on behalf of the Coalition of EPSCOR States. I am accompanied by Ms. Priscilla Kilcrease, who is Director of Research and Development for the Louisiana Board of Regents, and is here representing the Louisiana Commissioner of Higher Education.

EPSCOR is an effort by the National Science Foundation to address a problem with which I know you are already very familiar, the current concentration of federal research support in a few states and regions of the country. If I may, I would like to direct your attention to chart one, which illustrates this problem very clearly.

As you can see, the EPSCOR states have 13.3 percent of the United States population, but receive only 5.6 percent of the federal R&D support. In contrast, the top five states have 27.9 percent of the population yet receive 44.5 percent of the federal R&D dollars.

We believe very strongly that the extent of this concentration is very much not in the national interest. We contend that, first, it contributes to the substantial disparities that exist among states in wealth and levels of economic development; two, it disadvantages our states in the competition to develop high tech jobs and industry; and, three, it is one of the reasons that there is a crisis in the training of scientific manpower because many students in EPSCOR states, including many minority students, do not have the opportunity to be exposed to first rate scientific programs; and, four, it makes achieving a national political consensus in support of research and science more difficult when only a few states receive most of the benefits.

Mr. Chairman, it is now time for a serious governmental-wide systematic effort to broaden this nation's research base, and we believe that the EPSCOR approach as developed and refined by the National Science Foundation for over ten years is the best way to proceed.

We are not alone in this view. Dr. Alan Bromley, the President's Science Advisor and Dr. Erich Bloch, the NSF Director, have expressed specific support for having the EPSCOR model adopted by other departments.

I would also note that the Association of American Universities and the National Association of State Universities and Land Grant Colleges are both on record in this regard. What is the EPSCOR model?

Briefly, it involves a federal-state partnership supporting merit reviewed statewide plans to bring science and engineering research activities to nationally competitive levels. Accordingly, we hope that this subcommittee will consider having the Department of Energy make available a small amount of its research funding, perhaps up to $4 million to states for competitively awarded EPSCOR type grants.

This amount of money could support a number of planning grants for states to assess their potential in areas of energy research and to develop comprehensive plans to develop this potential. In conclusion, Mr. Chairman, we do not believe that this is in any way an unreasonable position.

As indicated by chart 3 in the handout, the leading research states receive a much higher percentage of the total R&D spending from the Federal Government than do the EPSCOR states. At the same time, the EPSCOR states, as indicated by chart 4, make a much greater effort from state and local sources than do the top states which are significantly more wealthy.

Again, thank you very much for this opportunity to appear before you. Ms. Kilcrease and I would be happy to answer any questions you may have.

[The statement of Dr. McCallum follows:]

Statement of

Charles A. McCallum, D.M.D., M.D.
President
University of Alabama at Birmingham

accompanied by

Priscilla Kilcrease
Director of Research and Development
Louisiana Board of Regents

on behalf of the

Coalition of EPSCoR States

before the

Subcommittee on Energy and Water Development
Committee on Appropriations

April 3, 1990

Statement by
Charles A. McCallum, D.M.D., M.D.
on behalf of
The Coalition of EPSCoR States

Mr. Chairman, members of the Subcommittee, I appreciate very much the opportunity to testify before you today on behalf of the Coalition of EPSCoR States. I am accompanied by Ms. Priscilla Kilcrease, who is Director of Research and Development for the Louisiana Board of Regents and is here representing the Louisiana Commissioner of Higher Education.

Mr Chairman, I know that a little more than a month ago my friend and colleague, Roger Sayers of the University of Alabama briefed you about EPSCoR, the National Science Foundation's Experimental Program to Stimulate Competitive Research and about our Coalition's support for expanding the EPSCoR concept to other Federal agencies and departments. Roger and I agree that this effort is very much in the interests of our institutions, as well as Alabama's other research universities, and comparable institutions in the other EPSCoR states. In our area of the country, these include Louisiana, as Ms. Kilcrease's presence here today indicates, Mississippi, Kentucky, South Carolina, and West Virginia. In the southwest area we have Oklahoma and Arkansas; in the northeast, Maine and Vermont; in the west, Nevada, and virtually all of the mountain states--North and South Dakota, Montana, Idaho, and Wyoming. Puerto Rico is also an EPSCoR participant.

Mr. Chairman, EPSCoR is an effort by NSF to address a problem with which I know you are already very familiar--the current concentration of Federal research support in a few states and regions of the country. If I may, I would like to direct your attention to Chart 1 which illustrates this problem very clearly. As you can see, the EPSCoR states have 13.3% of the US population, but receive only 5.6% of the Federal R&D support. In contrast, the top five states have 27.9% of the population, yet receive 44.5% of the Federal R&D dollars.

We believe very strongly that the extent of this concentration is very much not in the National interest. We contend that:

- It contributes to the substantial disparities that exist among states in wealth and levels of economic development;
- It disadvantages our states in the competition to develop high-tech jobs and industries,
- It is one of the reasons that there is a crisis in the training of scientific manpower because many students in EPSCoR states, including many minority students, do not have the opportunity to be exposed to first-rate scientific programs;
- Finally, it makes achieving a national political consensus in support of research and science education more difficult when only a few states receive most of the benefits.

The clear relationship between the amount of Federal research support received and a state's economic development supports our position. Chart 2, which deals with the "bottom line" of economic development, per capita income, shows this clearly--the EPSCoR states are substantially below the national average, while the top five states are, in most cases, significantly above that average.

Mr. Chairman, it is now time for a serious government-wide, systematic effort to broaden this Nation's research base, and we believe that the EPSCoR approach, as developed and refined by NSF for over 10 years, is the best way to proceed. We are not alone in this view; Dr D. Allan Bromley, the President's Science Advisor, and Dr. Erich Bloch, the NSF Director have expressed specific support for having the EPSCoR model adopted by other departments. I would also note that the Association of American Universities (AAU) and the National Association of State Universities and Land-Grant Colleges are both on record in this regard.

What is the EPSCoR model? Briefly, it involves a federal-state partnership supporting merit reviewed, state-wide plans to bring science and engineering research activities to nationally competitive levels. In my view, it is this focus on becoming scientifically competitive that is the reason that Dr. Bromley, AAU, and others support our efforts. I also support this approach. As you know, the UAB Medical Center has become nationally competitive in biomedical research, so we know that it can be done in an EPSCoR state. Now, we need to broaden our research activities at UAB and elsewhere in Alabama and in the other states of the Coalition. EPSCoR can be the key to helping us do this.

Accordingly, we hope that this Subcommittee will consider having the Department of Energy make available a small amount of its research funding, perhaps up to $4 million, to states for competitively-awarded EPSCoR-type grants. This amount of money could support a number of planning grants for states to assess their potential in areas of energy research and to develop comprehensive plans to develop this potential. For those EPSCoR states that have already made progress in this area, there could be a small number of larger implementation grants that would support research enhancement, infrastructure improvement and/or human resource development in energy research and the energy-related sciences.

In conclusion, Mr. Chairman, I would indicate that we are all aware of the very tight budget constraints that exist today, and we know how difficult it is to find new money for any effort, no matter how meritorious. Accordingly, we are asking that this request be met from ongoing research dollars available to the Department of Energy. We do not believe that this is in any way an unreasonable position. As indicated by Chart 3, the leading research states receive a much higher percentage of their total R&D spending from the federal government than do the EPSCoR states. At the same time, the EPSCoR states, as indicated by Chart 4, make a much greater effort from state and local sources than do the top states, which are significantly more wealthy. Thus, we believe that this request is fair and reasonable and hope that your Subcommittee will give it serious and favorable consideration.

Again, thank you very much for this opportunity to appear before you. We would be very happy to answer any questions you might have.

Chart I

COMPARISON OF POPULATION AND FEDERAL R & D $$ AS PER CENT OF THE U.S. TOTAL

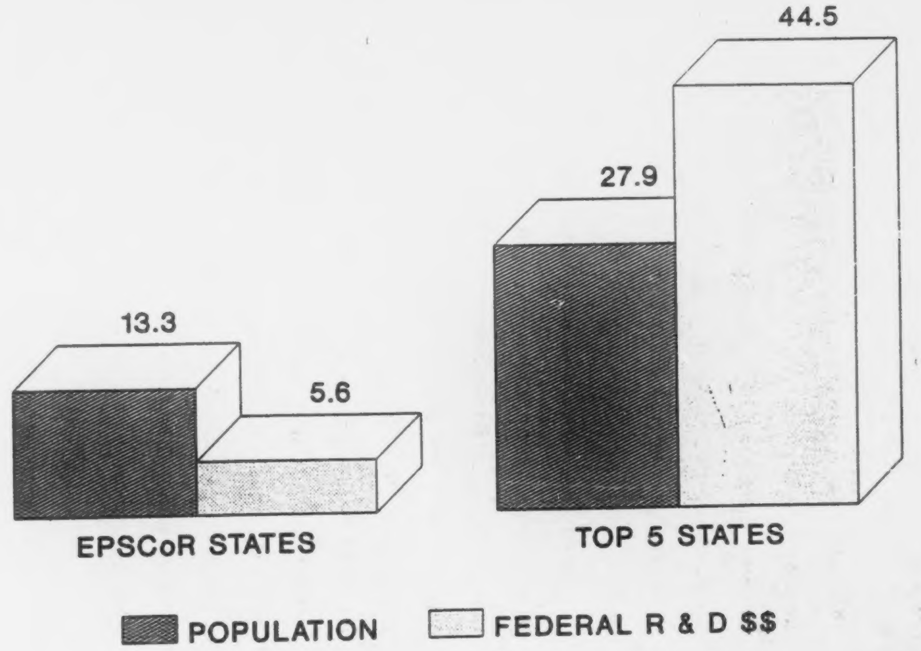


Chart II

PER CAPITA INCOME, 1988
PER CENT OF NATIONAL AVERAGE

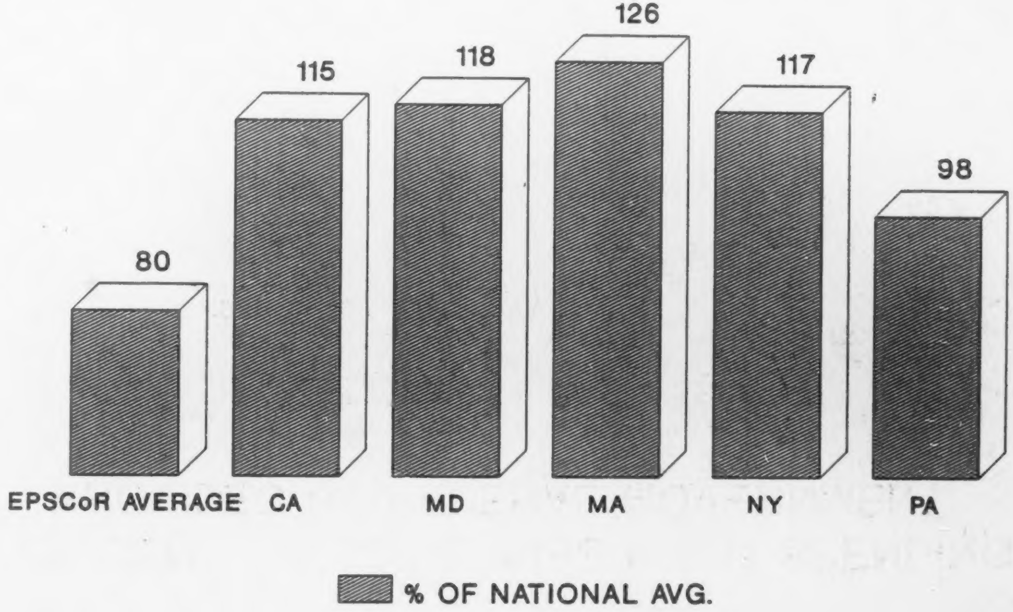


Chart III

PER CENT OF TOTAL 1988 R & D SPENDING PROVIDED BY FEDERAL GOVERNMENT

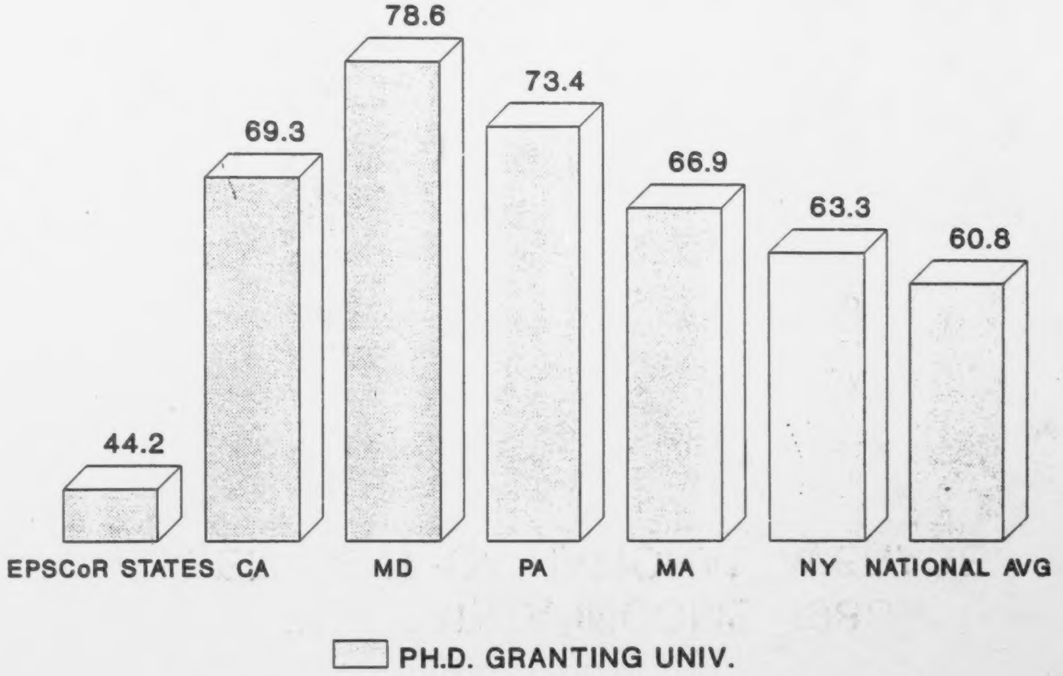
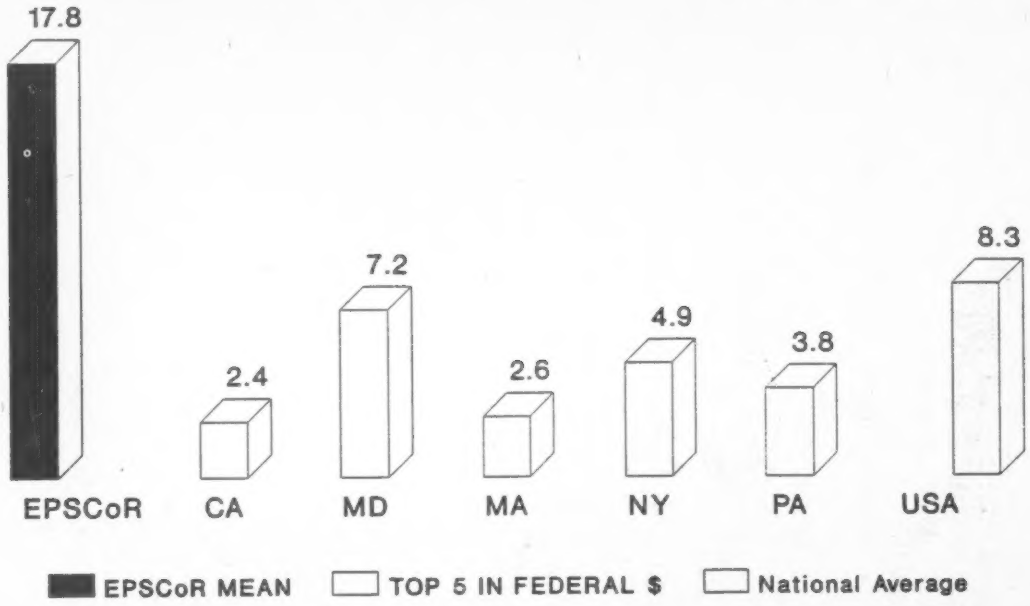


Chart IV

RESEARCH AND DEVELOPMENT SPENDING BY DOCTORATE-GRANTING UNIVERSITIES FY 88

% FUNDS FROM STATE AND LOCAL GOVERNMENT



Source: National Science Foundation

Mr. **Bevill**. Ms. Kilcrease, did you have anything to add?

Ms. **Kilcrease**. Not unless you have a question.

Mr. **Bevill**. Thank you very much for your testimony. It was a very good introduction, Ben. We will be working with Ben and will do what we can. There is more and more concern about the point you just made, and you put it together mighty well. Thank you very much.

Mr. **Erdreich**. Thank you, Mr. Chairman.

TUESDAY, APRIL 3, 1990.

PROTON THERAPY

WITNESS

LEONARD ARZT, EXECUTIVE DIRECTOR, NATIONAL ASSOCIATION FOR PROTON THERAPY

Mr. **Bevill**. Next is Mr. Leonard Arzt. Pleased to have you with us, Mr. Arzt. You may proceed as you wish.

Mr. **Arzt**. Thank you, Mr. Chairman. I am Leonard Arzt. I am Executive Director of a new organization, the National Association for Proton Therapy. We are a nonprofit public benefit formed to promote on a national scale the therapeutic benefits of proton cancer therapy in the United States. Through the generous support of this subcommittee, the world's first hospital-based proton beam accelerator dedicated to cancer treatment and medical research and developed in conjunction with the Department of Energy's Fermi National Accelerator Laboratory, will open for patient care this summer at Loma Linda University Medical Center in Southern California.

As you know, sir, the proton accelerator at Loma Linda University is a paramount example of U.S. scientific leadership in the world of physics, medicine, health, and healing applications, and is the direct result of some 40 years of Federal Government support at the large national laboratories.

The transfer of this technology has begun with the Loma Linda system. The mission of the National Association for Proton Therapy is to enable the benefits of this technology and its medical advances to be made available to primary care physicians, radiation oncologists and hospitals such that lives can be spared from cancer as well as from the effects of conventional treatments.

Each year more than 225,000 people in the U.S. fail to receive curative treatment of their cancers, even though they are treated when the cancer still remains in the localized stage. This problem has long been recognized as one of the major shortcomings of traditional cancer treatment methodologies. Proton therapy, on the other hand, which uses a beam of protons to destroy cancer cells, provides precise, effective treatment without the side effects associated with current forms of cancer treatment.

In over 8,000 clinical tests, proton therapy has been effective in treatment of various forms of cancer. The NAPT asserts that the national investment in this high technology, low risk medicine has a cost benefit to society when many tens of thousands of lives can be saved annually from cancer.

The vision of the NAPT is that a well-informed public, without the fear of early detection or the fear of treatment of cancer, and cognizant of the benefits of proton therapy, will be able to get treatment in their greater geographical regions, the result being a significant reduction in treatment disablement and death.

The NAPT will be supported and sustained by highly qualified medical institutions that will directly benefit from our public initiatives to integrate proton therapy cancer treatment into our national culture.

We are currently developing association memberships and working with various corporate groups to support the association's goals. Among the association's findings and supported by the National Cancer Institute concerning cancer in America, we know that cancer strikes one in four Americans annually.

We know that tumor cancer kills 100,000 Americans each year. We know that proton therapy cancer treatment has been demonstrated to be effective in more than 8,000 patients at two government-supported physics labs.

We also know the availability of proton cancer treatment is very limited by the lack of treatment facilities. The increased utilization of proton therapy would result from the availability of regional clinical treatment facilities and the awareness of the benefits of the technology.

Finally, proton cancer treatment for many forms of cancer is more efficient than conventional radiation treatment. Therefore, we believe it is in the interest of health cost reduction, improved treatment and increased lives saved to establish a demonstration program to support the transfer of the proton cancer treatment technology to clinical applications.

We plan in the near future to propose the establishment of a proton cancer treatment demonstration program, the purpose of which is to demonstrate an effective technology transfer of the government's nuclear medicine program developed by the National Laboratories to the medical community. The objective of the program is to assist a limited number of qualified medical centers in financing proton beam treatment facilities.

This would greatly increase the availability and utilization of proton therapy. We project the need for five regional proton therapy centers within the next five to ten years. Each center would be cost-shared by an eligible medical institution, the cost being approximately $130 million for the demonstration program. Mr. Chairman, I appreciate this opportunity to present this statement on behalf of the National Association for Proton Therapy and respectfully request the committee's continuing support and interest in furthering the development of proton cancer treatment in the United States.

Thank you very much.

Mr. **Bevill**. Thank you, Mr. Arzt, for a very fine statement.

[The statement of Mr. Arzt follows:]

The
National
Association
for Proton
Therapy

TESTIMONY PRESENTED TO THE
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
COMMITTEE ON APPROPRIATIONS
U.S. HOUSE OF REPRESENTATIVES

APRIL 3, 1990

7910 Woodmont Avenue, Suite 1301, Bethesda, MD 20814. Telephone (301) 913-9360, Fax (301) 656-1036
West Coast Office 6671 Sunset Boulevard, Suite 1574A, Los Angeles, CA 90028. Telephone (213) 463-8992, Fax (213) 463-4082

Mr. Chairman, I am Leonard Arzt and I am Executive Director of a new organization, the National Association for Proton Therapy. We are a non-profit public benefit corporation formed to promote on a national scale the therapeutic benefits of proton cancer therapy in the United States. Through the generous support of this subcommittee, the world's first hospital-based proton beam accelerator dedicated to cancer treatment and medical research, developed in conjunction with the Department of Energy's Fermi National Accelerator Laboratory, will open for patient care this summer at Loma Linda University Medical Center in southern California.

As you know, the proton accelerator at Loma Linda is a paramount example of U.S. scientific leadership in the world of physics, medicine, health, and healing applications and is the direct result of some forty years of federal government support at the large national laboratories. The transfer of this technology has begun with the Loma Linda system.

The mission of the National Association for Proton Therapy is to enable the benefits of this technology and its medical advances to be made available to primary care physicians, radiation-oncologists, and hospitals such that lives can be spared from cancer, as well as the effects of conventional treatments.

More than 225,000 people in the U.S. fail to receive curative treatment of their cancers, even though they are treated when the cancer still remains in a localized stage. This problem has long been recognized as one of the major shortcomings of traditional cancer treatment methodologies. Proton therapy -- which uses a beam of protons to destroy cancer cells -- provides precise, effective treatment without the side-effects associated with current forms of cancer treatment. In over 8,000 clinical tests, proton therapy has been effective in treatment of various forms of cancer.

The NAPT asserts that the national investment in this high technology medicine is a cost-benefit to society when many tens of thousands of lives can be saved annually from cancer.

The vision of the NAPT is that a well informed public, without fear of early detection or treatment of cancer, and cognizant of the benefits of proton therapy, will be able to get treatment in their greater geographical regions...the result being a significant reduction in treatment disablement and death.

The NAPT will be supported and sustained by selected, highly qualified medical institutions that will directly benefit from our public initiatives to integrate proton therapy cancer treatment into our national culture. We are currently developing Association memberships and working with various corporate interests to support the Association's goals.

Among the Association's findings (concerning cancer in America), we know that:

* Cancer strikes one in four Americans annually.

* Tumor cancer kills 100,000 Americans each year.

* Proton therapy cancer treatment has been demonstrated to be effective in more than 8,000 patients at two governments-supported labs.

* Availability of proton cancer treatment is very limited by the lack of treatment facilities.

* Increased utilization of proton therapy would result from the availability of regional clinical treatment facilities and awareness of the benefits of the technology.

* Proton cancer treatment is more efficient than conventional radiation treatment.

* Therefore, we believe it is in the interest of health cost reduction, improved treatment and increased lives saved, to establish a demonstration program to support the transfer of the proton cancer treatment technology to clinical applications.

We plan to propose the establishment of a PROTON CANCER TREATMENT DEMONSTRATION PROGRAM. The purpose of which is to demonstrate an effective technology transfer of the government's nuclear medicine program, developed by the national laboratories, to the medical community. The objective of the program is to assist a limited number of qualified medical centers in financing proton beam treatment facilities. This would greatly increase the availability and utilization of proton therapy.

We project the need for five regional proton therapy centers within the next five to ten years. Each center would be cost-shared by an eligible medical institution. The cost being $130 million for the demonstration program.

Mr. Chairman, I appreciate this opportunity to present a statement on behalf of the National Association for Proton Therapy and respectfully request the committee's continuing support and interest in furthering the development of proton cancer treatment in the United States. Thank you very much.

TUESDAY, APRIL 3, 1990.

BIOFUELS

WITNESS

DAVID RINEBOLT, DIRECTOR OF RESEARCH, NATIONAL WOOD ENERGY ASSOCIATION

Mr. BEVILL. Next is Mr. David Rinebolt. Mr. Rinebolt, you may proceed as you wish.

Mr. RINEBOLT. Thank you, Mr. Chairman, Congresswoman Smith. It is a pleasure to be here to address the committee today on the issue of DOE's biofuels research and development budget. I represent the developers, equipment manufacturers, and feed stock suppliers for the biomass energy industry, which includes direct combustion gasification and liquid fuels technologies, including to some extent ethanol production.

During the last decade we have met with a fair amount of success in bringing our technologies into the marketplace. Biofuels now account for 5 percent of the primary energy supply in this country, but I think that the most telling statistic is the amount of electricity generation that we brought on line.

In the past ten years my industry has built the equivalent of seven to ten nuclear power plants that are powered by biomass fuels, fuels that don't release sulphur dioxide, that don't result in net carbon dioxide emissions which result in the greenhouse effect we have heard so much about lately.

The other by-product of these technologies, frankly, is jobs, and economic development in often rural areas of this country, which is where the feed stock supply lies. In the Northeast we account for about $1.2 billion in regional economy and over 80,000 jobs. A recently published study dealing with the Southeast region of the United States indicates that almost $900 million in regional economy results from biofuels utilization, as well as 57,000 plus jobs.

In your own state, Mr. Chairman, there are over 10,000 jobs associated with biomass energy production and over $186 million of income within Alabama alone. Within the context of the Department's R&D budget, we have three specific points to make. It is ironic this year that after years of cuts in funding we see a 40 percent increase in the President's request.

That request is $28 million, and we would indicate our support for that request. We, however, believe that a slight reallocation of the sub-line items within the biofuels R&D program is warranted. Our first priorities are the regional biomass programs.

These are near-term technology transfer programs that move the R&D out of the federal labs and into the commercial sector. They have been quite successful. They leveraged over a dollar, dollar-for-dollar in state and private money is matched for the federal dollars that have gone into the program, and then they have been quite instrumental in the growth of biomass technology utilization in the United States.

We would therefore request that this committee, which has continuously provided money for these programs would fund the regional programs at a $5 million level. Secondly, we believe that the short-rotation woody crops research ongoing at Oak Ridge National Laboratories is very important, both for future liquid fuels technologies, which the Department is attempting to develop, but also for existing technologies because direct combustion and gasification technologies can also make use of the short-rotation crops that are being developed at Oak Ridge.

The researchers there are without a doubt the best in the world. It is a credit to the department. We believe that this important research should be funded at a $7 million level, and of course that $7 million coming from the $28 million overall.

Finally, the other part of the DOE Program is the conversion work at SERI. My industry wishes to indicate its full support for the work being done there. We believe it is very important and it will bring biofuels into the 21st century.

However, because it has very little near-term application, we think that the regional programs and the Oak Ridge program should be number one and two in priority and that the remaining funding that you allocate to the biofuels division go to the SERI program for work in conversion research.

I pledge to you that industry has and will continue to work with the DOE Program, and we hope to bring these environmentally sound fuels into greater use in this country in the decade ahead. Thank you, sir.

[The statement of Mr. Rinebolt follows:]

NWEA NATIONAL WOOD ENERGY ASSOCIATION

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TESTIMONY

by

DAVID C. RINEBOLT
DIRECTOR OF RESEARCH
NATIONAL WOOD ENERGY ASSOCIATION

before

HOUSE APPROPRIATIONS COMMITTEE
ENERGY AND WATER DEVELOPMENT SUBCOMMITTEE

APRIL 3, 1990
WASHINGTON, D.C.

"Wood Energy"
The Renewable Alternative

INTRODUCTION

Mister Chairman, I am David Rinebolt, Director of Research for the National Wood Energy Association (NWEA). On behalf of the Association, I would like to thank you and the Subcommittee for providing us with the opportunity to testify regarding the U.S. Department of Energy's request for funding for biofuels research and development.

Biomass energy, of which wood energy is the largest component, currently provides 5 percent of the total energy used in the United States. Total energy generation from all renewable technologies accounts for 9 - 10 percent of the primary energy supply of this country. Energy is the single largest use of wood in this country, accounting for 160 million dry tons per year. Wood energy is currently used in all 50 states and produces electricity in 42 states.

The vast majority of the energy generated from biomass comes through the application of direct combustion technologies, and it is in this area that the greatest growth has occured. The amount of electricity generated from biomass feedstocks has increased from less than 200 megawatts at the beginning of the decade to over 7,700 megawatts at present - or the equivalent of 7 - 10 nuclear powerplants. Similar growth is evident in the use of biomass for process steam and process heat applications, as well as in space heating applications.

The energy potential of biomass is staggering, estimated at approximately 42 quadrillion BTU's - or over half of the total energy consumed in the United States - by the U. S. Department of Energy (US/DOE). Moreover, biomass utilization is not limited to direct combustion techniques. Current research and development programs within US/DOE are developing the technologies necessary to convert biomass to liquid and gaseous fuels. Biomass is the only renewable feedstock capable of replacing gasoline and other fuels in the transportation sector.

Given that our country is continuing to increase its dependence on imported fossil fuels, and that the size of domestic petroleum and natural gas reserves is continuing to dwindle, it is imperative that the federal government consider a variety of options to stimulate continued growth in the biomass energy. This Committee has played an important role combatting Administration efforts to undermine these important research programs. Your efforts have paid off with significant increases in the amount of power generated by environmentally benign renewable technologies. We in the renewable energy business hope that this Committee's support will continue.

THE U.S. DEPARTMENT OF ENERGY RESEARCH AND DEVELOPMENT PROGRAM

Funding for Biofuels R&D has taken a rollercoaster ride over the past ten years. At the beginning of the 1980's - FY 1981 in particular - funding was set at $57.7 million, mostly because of the Carter Administration's push for energy independence. Then the ride started, with funding falling to $30.5 million in 1982, and then plunging further to $21.00 the next year. There was a slight rebound in the 1984 - 1986 time period when funding averaged around $29 million. However, FY 1986 also signaled the beginning of the decline, with funding gradually reaching $13.4 million in FY 1989. The Administration request that year was a mere $7 million. Only firm, bipartisan support for this research effort saved the program.

The FY 1990 request, the last of the Reagan Administration budgets, came in at $9.00 million. Congress, in its wisdom, chose to fund the program at $16.14 million, restoring the Regional Biomass Programs to $4 million in funding after a one year decline to $2 million.

A big turnabout came in the FY 1991 Administration request. The new Administration's sensitivity to and awareness of biomass generation technologies led to a request of $28 million for Biofuels R&D.

NWEA believes that $28 million is a rational funding level for this important R&D effort. Biomass is a diverse, decentralized resource, which is fairly employment intensive and has positive impacts on rural economies. In the Northeast, biomass accounts for $1.2 billion in the regional economy and 80,000 jobs. In the Southeast, industrial biomass use results in over 57,000 jobs and almost $900 million in the regional economy. In your state, Mister Chairman, biomass use accounts for 10,184 jobs and $186,227,377 in net income.

The following constitutes NWEA's recommendation's for allocation of the $28 million request among the subprogram functions within the Biofuels R&D line item. It should be noted that the Administration's proposal has been publicized as the first year of an alternative transportation fuel initiative. Thus, the Adminstration does not allocate funding for the Regional Biomass Programs; nor does it allocate sufficient funds for the Short Rotation Woody Crops Program at Oak Ridge National Labs. NWEA believes that the Administration's aims can be met more efficiently with a slight reallocation among the subprogram functions.

REGIONAL BIOMASS PROGRAMS

The industry's number one priority within the Biofuels R&D budget is funding for the Regional Biomass Programs. Except for a one year decline in FY 1989, these programs have been funded at $4 million since their inception, at the behest of Senator Hatfield (R-OR) and Representative Conte (R-MA) in 1983. The Regions are charged to work with industry to commercialize existing technologies and they do their job very well. Matching funds from the states and the private sector have consistently equalled federal funding for the program. The Southeast region has achieved a match of $1.70 for every federal dollar spent. From a balance sheet perspective this program is a winner.

The industry is also supportive of these programs because they are the only federal effort that has done any significant work regarding direct combustion applications, including siting, permitting, and environmental issues. Environmental regulators, in particular, have a very dim understanding of the technologies being utilized in the over 4,000 biomass facilities that currently exist nationwide. The Regional Programs have been extremely helpful in educating these folks and in overcoming other barriers to wider use of an environmentally sound technology.

NWEA has been requesting that US/DOE to allocate $1.5 million to direct combustion issues for the past several years. While we have received verbal commitments from US/DOE regarding this funding, the money has never been obligated. Therefore, NWEA requests that the Regional Program funding be increased to $5 million, and that the additional funding be allocated, through the regions, to direct combustion issues.

This additional funding will allow pellet testing by the Northwest Regional Program, research on wood waste combustion by the Northeast and Southeast Regions, and MSW and RDF combustion testing in the Great Lakes Region. It will also help the regions help industry in dealing with a new trend in the states to regulate clean wood waste combustion under the same regulations that control medical waste. The states are erring on the side of caution because of ignorance about wood combustion systems. The Regional Programs are the only government entity with the resources and knowledge to provide the technical assistance that the regulators need. This is critical to the industry.

SHORT ROTATION WOODY CROPS

The Short Rotation Woody Crops Program (SRWC), managed by Oak Ridge National Labs, is the feedstock side of the US/DOE program. The program focusses on the development of hybrid trees and herbaceous crops which can provide feedstocks for direct combustion, gasification and liquid fuels technologies. Many environmentalists also look to these types of biomass as part of the solution to global warming since their growth cycles excess CO2 from the atmosphere. The trees and crops also show promise in applications ranging from protecting aquifers from contamination, preventing erosion on marginal farmland, and as organic sewage treatment systems.

The program people at Oak Ridge are the best in the world when it comes to short rotation technology. While the European Economic Community is spending around $25 million alone on short rotation tyring to catch up to us it is ironic that the SRWC Program has been cut literally to the bone over the past few years in internal US/DOE funding allocations. This is a program that has developed trees that can grow to 50 feet tall and 5 inches around in 5-6 years. But, these results need to be replicated at a variety of sites for this feedstock to move into the commercial sector. And, as with any plant genetics oriented program, this research takes time. The first tree planting and species screening started in 1978. It is ready to bear fruit now, but needs sufficient funding. NWEA recommends a minimum allocation of $7 million for this important program.

A $7 million funding level is significantly higher than the Administration anticipates for this program, but is not inconsistent with the Administration's aims. US/DOE sees SRWC as the feedstock for it's liquid fuels technology. However, it has devoted most of the program resources to SERI for conversion technology development. NWEA believes, that because of the lead time necessary for the genetic improvements, plus the need to develop efficient harvesting and transportation technologies, and to develop a supply infrastructure, that more emphasis needs to be placed on this program. The biomass industry has spent the last 12 years developing feedstock supply infrastructures and have been succesful in California, New England, parts of the Southeast and parts of the Great Lakes. Markets are still under development in the Mid-Atlantic, the Deep South and the Ohio and Mississippi River Valleys. It takes time, patience and perserverance to develop feedstock supplies. If US/DOE really wants to develop a liquid fuels industry, they need to develop the supply first.

The existing biomass industry, which US/DOE has assumed will develop the harvesting equipment and the other infrastructure, currently provides a market for the SRWC feedstocks. NWEA's vision is to develop regional SRWC sites in conjunction with industry and the farm sector. The existing industry will provide a market for SRWC. Then, when the liquid fuel conversion technology finally comes out of the SERI labs, a skeleton feedstock infrastructure will be in place that can be expanded to provide the necessary raw materials. Consistent funding at around a $7 million level over the next five years is simply what it is going to take to make this happen.

CONVERSION TECHNOLOGIES - SERI

The biomass energy industry is supportive of the conversion work being done at SERI. The research ongoing at that facility will bring renewable organic fuels into the 21st Century. Unfortunately, very little of their research is applicable to current concerns of the biomass energy industry. It is very applicable to the chemical feedstock industry and will eventually spin off a new transportation fuel industry.

The bottom line is that given current plans to construct a new facility for SERI, which will undoubtedly have a limiting effect on research over the next year or two, NWEA believes that the SERI program be funded at around $14 million, or the balance of available funding after allocation of $5 million to the Regional Programs and $7 million to Short Rotation Woody Crops.

OTHER PROGRAM COMPONENTS

NWEA opposes the allocation of $2.4 million from the Biofuels R&D budget to hydrogen research. Funding for this program should come from the overall renewable R&D funding, since all renewable technologies can be used as sources for the production of hydrogen, or it should be funded as a separate line item. Biomass is one of the least likely feedstocks to be used in the production of hydrogen and this set aside is inappropriate.

NWEA supports US/DOE's municipal solid waste initiative and approves of the allocation of program funding to this important research.

NWEA opposes continued funding of the aquatics program. The technology is too long term, and has too many environmental problems to make a significant contribution to this country's energy needs at any time in the forseeable future.

CONCLUSION

* NWEA supports the allocation of $5 million to the Regional Biomass Energy Programs.

* NWEA supports the allocation of $7 million to the Short Rotation Woody Crops Program and requests that the program continue to be run by Oak Ridge National Lab.

* NWEA supports a $28 million funding level for Biofuels R&D.

TUESDAY, APRIL 3, 1990.

MAGNETIC FUSION RESEARCH PROGRAM

WITNESS

GEORGE C. GOLDENBAUM, PRESIDENT, UNIVERSITY FUSION ASSOCIATION

Mr. BEVILL. Next, we have Professor George Goldenbaum. Professor, we will be glad to hear from you. You may proceed as you wish.

Mr. GOLDENBAUM. Thank you.

Mr. Chairman, my name is George Goldenbaum. I am Professor of Physics at the University of Maryland. I am here today as President of the University Fusion Association. The University Fusion Association is an organization of scientists and engineers engaged in fusion research at universities. The association has members in 33 universities in 20 states. There are several different plans being put forward to determine the future of fusion research in the United States.

These include the idea of creating a non-military inertial confinement effort in the Office of Fusion Energy. In addition, major new magnetic fusion projects are being planned called CIT and ITER. CIT is a U.S. experiment to explore the effects of burning plasmas in which a significant amount of fusion energy is produced, while ITER is a larger international project to investigate ignited plasma at reactor physics and technology.

The university community has an interest in these plans and the budgets associated with them. I wish to tell you some of our concerns. We believe that the academic community plays a vital role in the development of fusion power. It serves as a source of new ideas and experiments.

It can provide an impartial view and above all it is a primary source of trained personnel for the fusion program and also is an important source for other U.S. science and technology programs.

At this point in time it is quite clear that whatever plan is adopted for the future of fusion, the associated research activities must extend well into the next century. This means that most of us will not be involved in that program at its completion.

Consequently, there is a need to replace the present corps of about 2,000 fusion scientists and engineers. These replacements will come from the universities. It is clear to us that there is a need to be a mix of university and national laboratory groups to train the large number of students needed.

Any plan of action should take this into account. About nine months ago we interviewed approximately one-fourth of the membership of the association and asked their opinions on a variety of subjects related to the Magnetic Fusion Program.

Most of the university community agreed with doing a burning plasma experiment such as CIT as a next stage. However, only with conditions. The main condition is that the funds for building CIT come from money added to the program budget. Most members expressed the feeling that a minimum budget figure of $400 million a year is necessary to carry out CIT along with the present base components needed to guarantee that the entire program moves forward.

This figure does not include the needed additional funds for work beyond CIT, such as ITER and the other physics and technology projects. Before committing further to ITER, additional funding adequate to cover either costs should be added to the budget. ITER is likely to be an expensive project that will require about $100 million a year from the United States.

Additional funds will clearly be needed for participation in ITER at a construction and operational level. Another question asked had to do with the balance in the program between fundamental scientific research and advanced technology experiments.

Most respondents to the UFA questionnaire feel that basic experimental research in both fusion and non-fusion parameter experiments are necessary to advance our knowledge of the necessary plasma physics and technology. In summary, they, the members of the University Fusion Association, are concerned that further cuts in the fusion budget, even with no significant program changes, will do long-lasting harm to university programs in fusion science and engineering.

We request that no further cuts take place. Programmatic changes with a level budget can also do harm to the universities. If Congress wishes DOE to proceed with the CIT experiment, the University Fusion Association requests that Congress increase the Office of Fusion Energy Budget to at least a level of $400 million a year to allow the initiation of the CIT experiment without harming the present base program in fusion science and engineering.

The base program is necessary not only to understand how to design a fusion reactor, but also to train the graduate students who will be needed to carry this program to completion. Additionally, the UFA feels that additional U.S. effort in ITER should not be at the expense of CIT or the base program but must have additional funding. Similarly, starting an inertial confinement program in OFE would require additional funding or it would put the Magnetic Fusion Program in jeopardy.

Thank you.

[The statement of Professor Goldenbaum follows:]

Statement to the House of Representatives
Energy and Water Development
Subcommittee on Appropriations

April 3, 1990

by

George C. Goldenbaum
President, University Fusion Association
Laboratory for Plasma Research
University of Maryland
College Park, Maryland 20742

Summary.

The members of the University Fusion Association are concerned that further cuts in the fusion budget, even with no significant program changes, will do long lasting harm to university programs in fusion science and engineering. Programmatic changes with a level budget can do harm to the universities also. If the Congress wishes DOE to proceed with the CIT experiment UFA requests that Congress increase the Office of Fusion Energy budget to least to a level of $400M/yr. to allow the initiation of the CIT experiment without harming the present base program in fusion science and engineering. The base program is necessary not only to understand how to design a fusion reactor but also to train the graduate students which will be needed to carry this program to completion. Additionally the UFA feels that additional U.S. effort in ITER should not be at the expense of CIT or the base program, but must have additional funding. Similarly starting an inertial confinement program in OFE would require additional funding or it would put the magnetic fusion program in jeopardy

Introduction.

There are several different plans being put forward to determine the future of fusion research in the United States. These include the idea of creating a non-military inertial confinement effort in the Office of Fusion Energy. In addition major new magnetic fusion projects are being planned (CIT and ITER). CIT is a U.S. experiment to explore the effects of burning plasmas in which a significant amount of fusion energy is produced, while ITER is a larger international project to investigate ignited plasma reactor physics and technology. The university community has an interest in these these plans and the budgets associated with them.

The University Fusion Association.

The University Fusion Association is an organization of scientists and engineers engaged in fusion research at universities. Membership in the UFA is open to all faculty and professional research staff (exclusive of those at national laboratories), whose research activities in fusion are primarily at a university campus. The Association has about 120 members from 33 universities in 20 states. Nominally the Association is open to individuals working in magnetic confinement and inertial confinement. Since very little inertial confinement research is done at universities almost all the membership of UFA is comprised of magnetic fusion researchers.

We believe that the academic community plays a vital role in the development of fusion power. It serves as a source of new ideas and experiments; it brings scientific knowledge and technical expertise from many disciplines; it can provide an impartial view and long range perspective of the problems of fusion; and above all, it is the primary source of trained personnel for the fusion program and an important source for other U.S. science and technology programs.

Historically universities in the United States have played a strong and innovative role in fusion research. For example university scientists first experimentally demonstrated lower hybrid current drive in tokamaks and made major contributions to neoclassical transport theory. Some other pioneering university fusion accomplishments are listed in the appendix to this document. The universities are ready to continue this strong record of achievement in support of the U.S. magnetic fusion program.

Education of Fusion Scientists & Engineers.

At this point in time it is quite clear that any plan adopted for the future of fusion research must extend well into the next century. This means that most of us will not be involved in that program at its completion. Consequently there is a need to replace the present corps of about two thousand fusion scientists and engineers. These replacements will come from the universities. In addition to just recruiting replacements we want to recruit top quality replacements. If fusion is to succeed in the most efficient way we need to attract good students. Those of us on university faculties know how difficult this is. There are many interesting research programs competing with fusion for the brilliant minds of young graduate students. In order to get good students we must allow these students to work on exciting research projects with their faculty advisors. The argument has been made that universities can collaborate with other laboratories by sending students to work on a large tokamak at some distant location. There are many projects one can envisage that can only be done this way. Because of the small number of large experiments the number of students that can be trained in this way is limited. On the other hand there are many other research projects that one can imagine to be best done on small, specialized experiments at the university. In addition it is not clear that graduate students will have the same high quality educational experience at a national laboratory that they will have at a university. Students working on a big experiment tend to be narrowly focused on a particular diagnostic. The opportunity to run an experiment and make mistakes is a valuable educational experience not likely to be available on an expensive, highly regimented apparatus. Finally who will take the responsibility for advising the students on a daily basis, will the large laboratory have someone dedicated to students ? It is clear to us that there needs to be a mix of university and national laboratory experimental and theory groups.

UFA Questionnaire.

About six months ago we interviewed approximately one fourth of the membership and asked their opinions on a variety of subjects related to the magnetic fusion program. The viewpoints of these individuals are quite diverse and cannot properly be represented by an overall average response. I will tell you some of the comments that I heard at that time as well as since then which have impact on the matter being considered today.

CIT & ITER.

One question we had asked in the survey and continue to ask has to do with the wisdom of choosing a burning plasma or ignition experiment as the next step in the MFE program. Most of the university community agree with doing a burning plasma experiment as the next step, however only with conditions. The main condition is that the funds for building CIT come from money added to the program budget. Most members expressed the feeling that a minimum budget figure of $400 M/yr. is necessary to carry out CIT along with the present base components needed to guarantee that the entire program moves forward. This figure does not include the needed additional funds for work beyond CIT, such as ITER and other physics and technology projects.

Less than a year ago there was a considerable amount of confusion in the university community about the design of CIT, possibly due to the fact that very few people were consulted on the necessary CIT physics or hardware design. In the last six months the CIT "project" has opened up to the universities and formed a steering committee with some university faculty on it and in addition has invited university participation in the CIT experiment. These are positive signs which we hope will continue and result in improvements in CIT.

A significant number of UFA members feel that a there are problems of higher priority that should be investigated before committing the U.S. to a burn or ignition experiment. For example, physics issues associated with transport are not as well understood as they should be to do a long pulse, high Q, or nTτ experiment. If transport of the main species is not well understood the understanding of alpha particle transport is even less well understood. Other UFA members feel that this is a reason for doing a burn experiment. Even among those in favor of CIT being pursued at this time there is a feeling that the proposed CIT experiment does not have a long enough pulse length to answer relevant physics questions associated with burn. Related to this is the question of whether we want a D-T reactor, or should we consider the D-T reactions as the first stage "match" to heat the plasma for other reactions, e.g. D-^{3}He, that don't have the neutron problems that D-T has. Will CIT be versatile enough to contribute to understanding this question? We recommend that DOE sponsor a meeting where the magnetic fusion community can discuss CIT goal related issues before final committments are made to the design of CIT.

Finally the question of whether it makes sense to do both CIT and ITER needs to be addressed. It seems reasonable to interject an intermediate experiment between TFTR and ITER to gain some experience with alpha particle heating. Before committing further to ITER additional funding adequate to cover ITER costs should be added to the budget. ITER is likely to an expensive project that will require about

$100M/yr. from the U.S. Additional funds will clearly be needed for participation in ITER at a construction and operation level. Since neither the schedules nor budgets for either experiment are fixed at this time we have an opportunity to maximize the benefit to ITER from CIT.

Program Balance.

Another question asked had to do with the balance in the program between "fundamental" scientific research and advanced technology experiments. It has been argued that the MFE program in reaching for its goals must seek to produce plasmas with parameters (density, temperature, confinement) appropriate for fusion energy generation. At the same time it has been argued that a balanced base program (in basic non-fusion parameter experiments, theory, alternate concepts and technology) needs to be maintained in parallel. Most respondents feel that experimental research in both fusion and non-fusion parameter experiments are necessary to advance our knowledge of the necessary plasma physics and technology. An important example of an effort combining fundamental research in small and large parameter pushing experiments is the transport initiative. It is felt that the transport initiative was worthwhile and possibly the most important part of the present program. The feeling of many respondents is that the expectation that transport will be understood in two or three years of intensive study was naive. We recommend that a high level of funding for research in this important area be continued for many years.

University researchers have direct access to colleagues in other disciplines which encourages the cross fertilization of ideas across the boundaries of conventional areas of research. This kind of exchange is extremely important for generating new innovative ideas. In addition the universities are less costly than national laboratories and are probably more cost effective in performing new and risky experiments as well as theoretical investigations. Included, but not exclusively, in this category are alternate concepts. There is some concern that the only place for alternate concepts in the present program is as a physics support base for the tokamak program, i.e. to learn about the physics of tokamaks in a regime tokamaks don't usually operate. There appears to be no room for alternate concepts for their own sake as replacements for the tokamak. UFA request that funds continue to be made available for a broadly based alternate conceptsresearch program.

Conclusion.

In summary the university community sees itself a assuming a variety of roles in the fusion program. As stated above there are collaborative research efforts that are best done at large national laboratory installations and other research activities most effectively done in small university groups. We recommend that whatever plan of action is decided on it should take into account in an explicit way research done at universities as well as their associated educational functions.

Appendix

University Fusion Accomplishments

1. Pioneering of high density, high magnetic field tokamak.
2. Discovery of t increasing with n, Alcator scaling.
3. Lower hybrid current drive, steady state current drive.
4. Turbulence theory, connecting plasma instabilities to transport.
5. Theory of space-time evolution of instabilities, absolute vs convective.
6. Measurement of fluctuations in plasma edge and correlation with transport.
7. Understanding of induced stochasticity, transition to chaos.
8. Major contributions to neoclassical transport theory.
9. Development of diagnostics such as the ion beam probe, EUV emission and far infrared scattering.
10. Discharge cleaning methods for impurity control.
11. Development of plasma sources.
12. Development of radiation sources for heating.
13. Development of alternate concepts, e.g. the spheromak.
14. Development of models for reactor studies.
15. Identification of second stability regime.
16. Development of particle simulation codes.
18. Theory of alpha particle physics.
19. MHD theory of equilibrium, Grad Shafranov equation.
20. Experimental demonstration of bootstrap current.

TUESDAY, APRIL 3, 1990.

POWER MARKETING ADMINISTRATIONS

WITNESS

MORGAN D. DUBROW, SENIOR STAFF ENGINEER, NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION

Mr. BEVILL. Next we have Morgan Dubrow. We are glad to have you with us again. You may proceed as you wish.

Mr. DUBROW. Thank you, Mr. Chairman.

I am delighted to be here and to speak to the committee on behalf of the National Rural Electric Cooperative Association, and the 26 million people that we serve. I want to start by expressing to the committee our deep appreciation for the fact that the committee and the Congress have supported our program and insisted that power that 650 member systems purchased be purchased at cost and at the interest rates which were in effect at the time these projects were built.

In our 48th annual meeting in Florida, we again had a resolution supporting all water resource projects, and we continue to do that. I have in my written testimony supported the programs of the Corps of Engineers and the Bureau of Reclamation and the Power Marketing Administrations and the nuclear program of the Department of Energy.

I would ask that the committee give consideration to restoring some of the funds for the Garrison project, and I want to compliment Mrs. Smith for her efforts in having the North Loup project back in operation and persuading the administration to go forward with Davis Dam.

Mr. BEVILL. Mrs. Smith has a way of explaining things that gets results.

Mr. DUBROW. That's right. We are happy to have someone like her in our corner.

Mrs. SMITH. Let me add a comment. It was this great committee that stood with us, that made it possible.

Mr. DUBROW. The only other comment I want to make is that having worked with and for the power marketing administration, I am very pleased that the administration provided with carry-over adequate funds, but I am disturbed at the fact that they—I think without full knowledge of the impact eliminated three field positions in the Western Area Power Administration and up to 200 positions at Bonneville.

I know these positions are needed now and that if we can't get the ceilings restored, that work will have to be contracted if these administrations are to continue to provide the power in the reliable way they have in the past.

I implore the committee to do what they can to restore those ceilings. I thank you very much for the opportunity to appear.

Mr. BEVILL. Thank you for a very fine presentation.

[The statement of Mr. Dubrow follows:]

STATEMENT OF NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION
ON F.Y. 1991 APPROPRIATIONS
BEFORE THE ENERGY AND WATER DEVELOPMENT SUBCOMMITTEE
COMMITTEE ON APPROPRIATIOONS
HOUSE OF REPRESENTATIVES

April 3, 1990

Mr. Chairman, my name is Morgan Dubrow, Chief Engineer of the National Rural Electric Cooperative Association (NRECA). NRECA is the national association of over 1000 rural cooperatives which supply central station electricity to over 26 million people in the rural areas of 46 states. NRECA thanks this Subcommittee for its leadership and the Congress for blocking the sale of transmission systems, and for insisting that power marketing administration (PMA) rates be based on capital cost and interest rates that prevailed when the projects were authorized.

NRECA supports the F.Y. 1991 budget request for the Corps of Engineers, $3.54 billion; Bureau of Reclamation, $1.04 billion; Department of Energy's PMAs, $555.0 million; and other DOE energy programs, including $683.5 million for nuclear projects. NRECA emphasizes the need for:

- $19.8 million for the Central Valley Project, California.
- $22.9 million for the Richard B. Russell Dam, Georgia-South Carolina.
- $47.0 million for Garrison Diversion Unit, North Dakota.
- $11.5 million for Harry S. Truman Dam and Reservoir, Missouri.
- $198.5 million for Central Arizona Project, Arizona.
- $98.8 million for the Central Utah Project, Utah.
- $13.4 million for the Animas-LaPlata Project, Colorado.
- $110.4 million for Columbia Basin, Chief Joseph, and Bonneville projects.
- $21.6 million for the North Loup Division, Missouri Basin Project, Nebraska.
- $4.5 million for the Groundwater Recharge Demonstration Program.
- $50.4 million for the Dolores Project.
- $23.9 million for Boulder Dam Project, Arizona-Nevada.
- $231.5 million for operation and maintenance for the Bureau of Reclamation.

At our 48th annual meeting in Orlando, Florida in February 1990, our members again unanimously passed resolutions supporting appropriations for water resource and hydroelectric projects throughout the United States.

Opposition to Sale of Power Marketing Administrations

NRECA strongly opposes the President's 1991 legislative proposal to sell the Alaska Power Administration, and any part of Bonneville, Western, Southwestern or Southeastern Power Marketing Administrations. Our 650 rural electric cooperatives purchase this power at cost. Legislative proposals for the use of straight-line amortization and current interest rates by the Bush Administration would increase average federal power rates by 57 percent in Western (WAPA), 40 percent in the Pacific Northwest (BPA), 75 percent in the Southwest (SWPA), 60 percent in the Southeast (SEPA), and 22 percent in Alaska (APA).

Construction for the Bureau of Reclamation

The Administration has recommended funding the Bureau's construction program of $609.4 million which will permit the timely completion of projects which are underway in the current fiscal year. Unfortunately, this does not include $55.5 million of additional funds needed for the Garrison Diversion Unit, the Mni Wiconi Rural Water Project in South Dakota, and the Umatilla Basin Project in Oregon. All three were funded by the Congress in F.Y. 1990. We believe it is wasteful to start and stop ongoing projects such as these three. We urge the Subcommittee to restore the funds to continue these three projects. We also strongly continue our support for the $67.3 million for the Safety of Dams program (excludes $14.2 million for Central Arizona Project's Roosevelt Dam).

Construction and Planning for the Corps of Engineers

We strongly support the $1.4 billion for construction of Corps of Engineers' water and power projects.

Central Valley Project

We support the appropriation of $19.8 million in F.Y. 1991 for the Central Valley Project. The Auburn-Folsom South Dam has a potential of 300 MW of hydroelectric power, with the possibility of an additional 400 MW for pumpback units. We support the Bureau of Reclamation's efforts in working with the American River Authority that proposes a $700 million bond issue to pay half the cost to build this much needed multipurpose project.

Richard B. Russell Dam

Funds in the amount of $22.9 million are needed in F.Y. 1991 for continued construction of the Richard B. Russell Dam Project on the Savannah River between Georgia and South Carolina. It will provide 600 MW of needed hydroelectric power, 300 MW base load, and 300 MW of pumpback power.

Garrison Diversion Unit

We recommend restoration of the $47.0 million required for construction of the Garrison Diversion Unit. The Garrison Unit is authorized by law and has en excellent benefit-cost ratio and is strongly supported in North Dakota. This $47.0 million would be applied toward the completion of the Garrison Diversion Unit. These funds would allow the completion of Reach 2 of the New Rockford Canal and construction of recreation facilities. State and Indian municipal, rural and industrial water programs, and continued purchase and development of fish and wildlife lands for mitigation would also be funded.

Harry S. Truman Dam and Reservoir

We support the appropriation request for $11.5 million in F.Y. 1991 for construction and operation and maintenance at the Harry S. Truman Dam and Reservoir and urge the use of the full hydro potential at the project.

Central Arizona Project

We urge the Subcommittee to appropriate $198.5 million required in F.Y. 1991 to continue construction of the Central Arizona Project . We are pleased with the excellent progress being made to deliver water to a variety of needs in arid Arizona.

Animas-LaPlata Project

As in the past, we continue our support of the Animas-LaPlata Project because it will implement the agreement between the Indians, the federal government and the States of Colorado and New Mexico to resolve long-standing water rights. $13.4 million is needed to expand construction efforts that will begin this Summer and thereby enable the completion of the project within an engineeringly efficient schedule of 12 years.

Central Utah Project

We request support of the $98.8 million F.Y. 1991 budget request for the Bonneville Unit of the Central Utah Project. Most of these funds will be used for work on highway relocations, land acquisition and construction of Stage II of the Jordanelle Dam and Reservoir. New contracts will be awarded for Indian Ford Pumps, for the Sixth Water Tunnel and Aqueduct and for the land and rights for the Diamond Fork Pipeline.

Columbia Basin and Other Pacific Northwest Projects

NRECA supports the $110.4 F.Y. 1991 appropriation request for irrigation facilities and the Third Power Plant at Grand Coulee, Chief Joseph, Bonneville and other facilities of the Columbia Basin projects.

Mni Wiconi Rural Water Project

Congress appropriated $500,000 to initiate the construction of the Mni Wiconi Rural Water Project in F.Y. 1990. Although the Office of Management and Budget did not fund the project, we urge the Subcommittee to provide $1.5 million to proceed with the project's construction so that municipal, rural and industrial water can be provided to the Pine Ridge Indian Reservation and to ranching and farming areas in Southwestern South Dakota.

Umatilla Basin Project

In keeping with the spirit of provisions in the Pacific Northwest Electric Power Planning and Conservation Act, we urge a continuance of the Umatilla Basin Project as authorized by Public Law 100-557. OMB failed to provide a F.Y. 1991 allowance that would enhance instream flows in the Umatilla River for anadromous fishery, consistent with a F.Y. 1990 Congressional appropriation of $641,000 to initiate construction. We recommend follow-on funding of $7 million to complete this $45.7 million endeavor. The $7.0 million would be used to construct the first phase West Extension Irrigation District water exchange facilities, to begin designs of the Columbia River pumping plant, and to complete pre-design activities on the remainder of the project.

Dolores Project, Colorado

Now that the Dolores Project is two-thirds complete, substantial benefits will accrue to the water and power users of Southwestern Colorado during the next three fiscal years. A full supply of water will be delivered to 11,400 acres in F.Y. 1991 through a prospective appropriation of $50.4 million. This will also prepare the way for another 3,000 acres in the next fiscal year, along with 12,750 kilowatts of power that will be generated by the Towaoc Powerplant. The Towaoc power supply will become a part of the Colorado River Storage Project power system.

North Loup Division, Missouri River Basin Project, Nebraska

We are pleased that the Administration has decided to resume construction of Davis Creek Dam, an integral part of the North Loup Division. Congresswoman Smith's persistence in explaining the merit of the entire project has paid off and we salute her. The NRECA endorses the Bureau's request of $21.6 million, for this will allow funding for the completion of Davis Creek Dam and allow substantial work to be accomplished on the Fullerton and Elba canals and laterals.

Groundwater Recharge Demonstration Program

A joint state-federal program will be continued in F.Y. 1991 to test various artificial means of supplementing groundwater supplies in the West. Reclamation will carry out cooperative grants with 21 projects in the western states.

Boulder Dam Project

We urge the appropriation of $23.9 million in F.Y. 1991 to make Boulder Dam safe for visitors. Funds would be used to complete work on the elevator shaft, visitor tour galleries and roadway realignment. These funds would also provide for initiation of construction of the multi-storage parking structure and visitors' tour center.

Bureau of Reclamation O&M Budget

We support an increase to $231.5 million for the Bureau of Reclamation's operation and maintenance (O&M) budget. Adequate O&M of projects remain a matter of the highest priority in order to meet contractual commitments for delivering water and power benefits to consumers. We were disappointed that the revolving fund was not adopted; it would have taken care of the Bureau of Reclamation O&M program in future years and provided flexibility needed for a business-like O&M program which, as you know, is financed by the users.

Federal Power Marketing Administrations

NRECA supports the $555.0 million for F.Y. 1991 appropriation request for federal power marketing agencies. The F.Y. 1991 requests by agencies are: $326.0 million for the Western Area Power Administration, $20.3 million for the Southeastern Power Administration, $35.4 million for the Southwestern Power Administration, and $3.2 for the Alaska Power Administration.

We support the Bonneville Power Administration's (BPA) $170.1 million budget funded through its self-financing revolving fund procedures. We also support restoration of borrowing authority for the third 500-kV line for BPA. We oppose OMB's proposal to expense the conservation program of BPA. We believe BPA should continue to capitalize this work as it does other resources. We oppose OMB action in reducing WAPA's staff by about 83 filled positions and BPA's staff by some 200 filled positions.

Nuclear Programs

Our association has resolutions supporting nuclear power and nuclear research programs. We request the Subcommittee to provide funds for the F.Y. 1991 budget request of $683.5 million for nuclear R&D programs and the nuclear waste fund. Funds to continue development of advanced nuclear technology are essential for maintenance of a viable nuclear industry. Nuclear power now provides about 20 percent of our nation's electrical needs and is vital to our economy. We urge the Subcommittee to provide all the funds requested for the following programs: $31.5 million for light water reactors; $47.0 million for advanced reactors; $54.5 million for space/defense power systems; $60.2 million for advanced radioisotope systems; $140.5 million for facilities; and $292.8 million for the nuclear waste fund.

The new advanced light water and gas reactors offer passive and inherent safety that excludes the possibility of core melt-down, the need for emergency evacuation plans, and assures economic nuclear power in small modular increments which can be factory fabricated. We believe these technologies will help reestablish a new political consensus favoring nuclear power. We appreciate your interest and support of nuclear power.

Clean Coal Technology

NRECA supports the completion of the $2.5 billion clean coal program to expand the number of commercially available technologies for reducing sulfur and nitrogen oxide emissions from coal-fired power plants. We view this as a wise investment which is matched by private sector funding to help develop technologies that will comply with the proposed Clean Air Act legislation.

I thank the Subcommittee for the opportunity to present this testimony.

Mr. **Bevill**. We will also insert the statement of the Southeastern Federal Power Customers Group in the record at this point.

[The information follows:]

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April 4, 1990

The Honorable Tom Bevill, Chairman
Committee on Appropriations
Subcommittee on Energy and
Water Development
2362 Rayburn House Office Building
Washington, D.C. 20515

Re: Submission of Written Statement of F.F. Stacy on Behalf of the Southeastern Federal Power Customers Group

Dear Chairman Bevill:

On behalf of the Southeastern Federal Power Customers Group, a coalition of many of the rural electric cooperatives and municipally-owned systems which purchase power from the Southeastern Power Administration, we are submitting the attached written statement of F.F. Stacy, Chairman, for the record of the Subcommittee on Energy and Water Development of the Appropriations Committee. This written statement expresses the opposition of nearly all of the present customers of the Southeastern Power Administration to the sale of SEPA's assets.

Please accept this statement for inclusion in the record of your hearings on energy and water development appropriations.

Respectfully submitted,

Sherry A. Quirk

Clinton A. Vince
Sherry A. Quirk

Enclosures
cc: Members of the Southeastern Federal
Power Customers Group

STATEMENT OF F.F. STACY ON BEHALF OF THE SOUTHEASTERN FEDERAL POWER CUSTOMERS GROUP BEFORE THE APPROPRIATIONS SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

I am submitting this statement on behalf of the Southeastern Federal Power Customers Group to express our strong opposition to the President's proposal to sell certain "exclusive marketing rights" of the Southeastern Power Administration ("SEPA").

The Southeastern Federal Power Customers Group is an ad hoc association of rural cooperatives and municipally-owned electric systems located in Alabama, Georgia, Mississippi and North and South Carolina, serving over 8 million consumers. These systems purchase power from SEPA, which markets the preference power produced at federal water projects in the Southeast. A list of our membership is attached.

In its zeal to provide immediate deficit reduction opportunities, the Bush Administration has proposed the sale of SEPA's marketing rights in the FY 1991 budget. As you know, the federal power marketing administrations ("PMAs") have been the target of previous budget cutting attempts. These attempts at divestiture, however, have found minimal support from Congress.

SEPA and the other PMAs have been providing the federal government with a consistent flow of revenue through the interest on and the repayment of the construction costs of the hydro projects. Divestiture of the PMAs individually, or as a whole, would undoubtedly be to the detriment of consumers of the power generated throughout the power marketing systems. Preserving the status quo is the only option which will assure that consumers receive the cheapest power possible while the federal government receives revenues through fair and competitive rates. Alteration of this dynamic, through sale of the marketing rights, will cause both sides to suffer. While the federal government would lose long-term revenues, consumers would face a competitive bidding process that would drive rates up.

As this issue becomes more prominent in the appropriations process, we ask that you continue your opposition to the sale of SEPA's marketing rights.

We thank you for your past support and present consideration.

F.F. Stacy /cna

F.F. Stacy, Chairman
Southeastern Power Resources
Committee

Alabama Electric Power Cooperative (Alabama and Florida)
Alabama Municipal Electric Authority
Central Electric Power Cooperative, Inc. (South Carolina)
Department of Public Utilities, Orangeburg, S.C.
East Mississippi Electric Power Association
ElectriCities of North Carolina, Inc.
North Carolina Electric Membership Corporation
North Carolina Municipal Power Agency Number 1
Oglethorpe Power Corporation (Georgia)
Piedmont Municipal Power Agency (South Carolina)
Saluda River Electric Cooperative (South Carolina)
Santee Cooper (South Carolina Public Service Authority)
South Carolina Electric Cooperative Association, Inc.
South Mississippi Electric Power Association

TUESDAY, APRIL 3, 1990.

NEBRASKA CENTER FOR ADVANCED TECHNOLOGY

WITNESSES

MARTIN A. MASSENGALE, INTERIM PRESIDENT, UNIVERSITY OF NEBRASKA SYSTEM, CHANCELLOR, UNIVERSITY OF NEBRASKA-LINCOLN

LEE B. JONES, EXECUTIVE VICE PRESIDENT AND PROVOST, UNIVERSITY OF NEBRASKA SYSTEM

DUANE W. ACKLIE, PRESIDENT, CRETE CARRIER CORP. MEMBER, UNIVERSITY OF NEBRASKA SCIENCE ADVISORY COMMITTEE

Mr. BEVILL. The Chair recognizes Mrs. Smith.

Mrs. SMITH. Thank you very much, Mr. Chairman. I am very proud and happy to introduce Dr. Martin Massengale, who is the President and Chancellor of the University of Nebraska; my special friend, Mr. Duane Acklie, who is on the Nebraska University Science Advisory Committee and who is the President of Crete Carrier Corporation; Dr. Lee Jones, Executive Vice President and Provost of the University of Nebraska; and also Mr. Terry Fairfield, who is the President of the University of Nebraska Foundation. And I would like to say to you, Mr. Chairman, that our University in Nebraska is really one of the foremost universities in our efforts to move ahead with the Center for Science and Technology.

We are all aware on this committee that we are going to have to do this sort of thing to keep our nation competitive with Japan, European countries or Pacific Rim countries who are already going ahead of us, and so I am very admiring and supportive of the efforts of our university.

Mr. BEVILL. Well, I certainly agree with you. We are delighted to have each of you here.

I don't have to tell you what an effective Congresslady you have. She can get things done, and we appreciate that.

We are going to miss her, too. We are still trying to talk her out of retiring.

Mr. MASSENGALE. Mr. Chairman, we hope you are successful. We are going to miss her also.

Mr. BEVILL. The Chair recognizes you. You may proceed as you wish.

Mr. MASSENGALE. Thank you, Mr. Chairman and Congresswomen Smith and Boggs. We thank you for the opportunity to appear before you today and testify on behalf of the Nebraska Centers for Science and Technology.

We received federal funds for planning and some of the funds needed for initiation of construction last year. Today, we are seeking your assistance to keep the project moving forward. There are several features in the Nebraska plan which make it unique. To begin with, the Nebraska research initiative has contributed or will contribute $90 million over a five-year period to the state's effort to develop and commercialize new technology.

Now, these funds represent a profound commitment by Nebraska legislators, by state government, by private business, private citizens toward ensuring a strong economic base, not only for the state but for the region and the nation.

I believe this commitment is unusual and is part of the longstanding tradition of self-help and mutual assistance that has long been a Nebraska heritage. In order to maximize the impact and return on the Nebraska commitment and to take the next step forward in this project, we need to build a Nebraska Centers for Science and Technology, and we are seeking federal help to complete that project.

Activities of the center will include research, development, and transfer to private industry of new products, processes, and technology. Work will focus on the areas of energy, agriculture, medicine, and the environment. We expect developments in genetic engineering, chemical engineering, and chemical interrelationships within the biological systems. Intensive academic work to ensure a new generation of scientists in fields related to energy, the environment, and biological scientists will also be a part of that plan.

Let me cite an example of the developments that we anticipate: chemical engineers at the university have played a leading role in research to produce industrial chemicals from biomass, a process that will contribute to the economic viability of renewable agriculture resources and the energy independence of the nation. Teams of scientists who are recognized as leaders in their fields will complement each other. They will be brought together in a facility that is planned that will enable them to share expertise, produce the synergy that would not likely occur if they were in disconnected units.

By extending this traditional barrier, I think, among disciplines and encouraging interactions, the center will produce practical solutions to problems in the real world. We expect to see several outcomes.

First, let me say that basic research will result in new and expanded knowledge of biological materials and processes. As an example, our research is leading to a new and more effective kind of biodegradable foam plastics from a starch base. And there are numerous other areas we expect important research development, notable in helping the nation reduce its dependence on oil by developing energy and other non-food uses of agricultural commodities.

Another outcome in the development of the center is that we will be designing new techniques to move us ahead with the type of work I have just described, for example, processes much more efficient in the production of ethanol from agricultural commodities. Finally, products and processes which can be transferred from the laboratory to private industry.

Let me also indicate that the heart of the Ogalala Aquifer underlies much of Nebraska and the future of the Platte and Missouri Rivers. They are of overwhelming importance to our region. Our concern for these and other crucial water resources is generating interest for the exploration of opportunities in what we call bioremediation, and that is using biological methods to prevent and clean up contaminated ground water.

The problems of rapidly growing population, world hunger, diseases are threats to water quality and the environment on a world wide basis. I think these are the kinds of problems our center would be prepared to provide a unique responsibility and answer to.

Finally, Mr. Chairman, let me say that we have a plan, I believe an impressive level of financial commitment from all parts of the state. And we seek your support in completing this plan that we have outlined to help with the federal funding for the Nebraska centers for science and technology.

Mr. Chairman, and Congresswomen Smith and Boggs, I want to say that we are very grateful to each of you for the opportunities to be here today and testify on behalf of this project.

My colleagues and I would be glad to answer any questions you might have at this time.

[The statement of Mr. Massengale follows:]

Testimony
by

Dr. Martin A. Massengale
Interim President, University of Nebraska System
Chancellor, University of Nebraska-Lincoln

Dr. Lee B. Jones
Executive Vice President and Provost
University of Nebraska System

Mr. Terry Fairfield
President, University of Nebraska Foundation

Mr. Duane Acklie
President, Crete Carrier Corporation
Member, University of Nebraska Science Advisory Committee

Before the
Energy and Water Subcommittee

of the
House of Representatives Appropriations Committee
April 3, 1990
3:30 p.m.

Mr. Chairman, Congresswoman Smith, members of the Subcommittee, thank you for the opportunity to testify on a topic of critical importance to the State of Nebraska--the Nebraska Centers for Science and Technology. This is not a new project. We received federal planning funds two years ago, and three million dollars to begin construction last year. Today we are seeking your assistance to keep this important project on track.

Background

To strengthen and diversify our state and national economies, we must continue to expand federal, state, and local investment in science and technology. Further, we must continue to focus attention on our lagging ability to move the results of basic research from the laboratory to the market place. As you know, Japan's success in a number of high tech industries is due in large part to their ability to commercially exploit new technologies--often technologies first developed in the United States.

Our universities have the strongest basic research programs in the world, and our industries have the strongest applied research programs in the world. Our challenge is to more closely link these education, research, and training efforts so that we will be able to lead the world well into the next century. The University of Nebraska and our State have embarked on a course to play a major role in this leadership.

Nebraska is striving to foster a new spirit of cooperation and to build a successful new partnership to focus the talents and resources of the University of Nebraska, private industry, and government on new solutions for the region and the nation. We must strengthen our ability to develop our human resources and encourage the development and transfer of new knowledge to new applications, new products, and new processes.

The new research thrust in Nebraska, of which the Nebraska Centers for Science and Technology is a critical element, has captured the collective imagination of our research faculty, Nebraska political leaders and the private sector in the State. The Nebraska Research Initiative, supported by our Governor and Legislature and the private sector will contribute $90 million over five years to the State's effort to develop and commercialize new technologies. The University is intensifying its research efforts in areas of strength, and is hiring additional highly regarded scientists in these and related areas. The Nebraska Centers for Science and Technology is the next step needed to make the Nebraska dream a reality.

Objectives

The State of Nebraska initiative has five objectives:

International Leadership in Advanced Technologies - The United States, while leading the world in basic research, has failed to realize the commercial potential of its technological strength. Through the Nebraska Centers, the University will stimulate development and commercialization of biotechnology.

Diversify the Economy of the American Heartland - The Midwest must now develop the educational, industrial, and human resources required to attract and sustain new industries and diversify its economic base. The Centers will provide the education, training, research, and technology transfer opportunities needed to propel the Midwest to the forefront of the advanced technology revolution for the benefit of the national economy and the global environment.

Foster Joint Industry, University, and Government Research - The federal government, currently the largest investor in basic research, private industry, the largest investor in applied research, and the universities, where the preponderance of research is conducted, must invest in the transfer of the products of this research to successfully exploit the benefits of American ingenuity and creativity.

Improve Education and Research Through Integration of Programs - The Nebraska Centers for Science and Technology will focus the University's existing efforts in biotechnology, and strengthen all programs through a multi-disciplinary approach. While others are also now exploring a systems approach, the University of Nebraska has a successful track record.

Provide a Central Research Facility and Industrial Applications Center to Support the Development and Commercialization of New Technologies - The construction of a central research and development complex will allow the University to physically and programmatically link the various components of our biotechnology efforts. In addition, the complex will provide a single access point for industry and government researchers seeking to initiate or supplement joint research endeavors.

The Nebraska Centers for Science and Technology

Organization of the Nebraska Centers

The University of Nebraska, with the advice and guidance of scientists and businessmen across Nebraska and the nation, has developed a unique research effort. The University has proven strengths in plant and animal sciences, process technologies and the application of a systems approach to problem solving. The Nebraska Centers for Science and Technology will provide an opportunity to coordinate and focus those strengths in a multi-disciplinary framework.

More than simply a biotech unit, the Centers will bring into a single cooperative setting the resources of three academic areas: Biotechnology, Biological Chemistry and Chemical Engineering. Scientists will focus on targeted basic and applied research critical to our regional and national economic security. Activities of the Centers will include research, development and the transfer of new products, processes, and technologies to private industry in agriculture, medicine, energy and the environment. The unique combination of skills and knowledge in genetic engineering, chemical engineering, and the chemical interrelationships within biological systems will lead to the development of new technologies.

Faculty in biological chemistry are recognized leaders in the field of photosynthesis, a biological process critical to the sustenance of human life. The Chemical Engineering Department at the University of Nebraska has a distinguished record in developing industrial chemicals from biomass, a process that will contribute to both the economic viability of agriculture and the energy independence of the nation. The new Center for Biotechnology involves scientists with demonstrated strength in plant and animal biotechnology. These vibrant and complementary resources brought into close proximity, sharing the challenge of complex problems and high expectations, can produce important results that simply would not flow from disconnected units.

The University of Nebraska has been a leader in demonstrating the value of a systems approach to solving problems and capturing opportunity. The Food Processing Center, the Agribusiness Program, the Industrial Ag Products Center, the Nebraska Technical Assistance Center and the Center for International Trade Policy are examples of successful programs developed at the University of Nebraska. By transcending the traditional boundaries between academic disciplines, these programs have produced solutions sensitive to the complexity of the real world. This approach has proven that the interchange of ideas, technologies and methods can be effective and, in fact, encourages new levels of creativity.

The Nebraska Centers will also provide an invaluable complement to the teaching mission of the University. In particular, the facility will provide expanded capacity for instruction in biochemistry, biotechnology, and chemical engineering for graduate students, undergraduates and high school students. We plan to continue the statewide outreach programs in these areas, including summer research programs for high school science teachers.

Focus of the Nebraska Centers

The focus for the Nebraska Centers will be three areas in which the University of Nebraska has a tradition of excellence, and in which the University has recently been able to attract additional world-class scientists--largely through the State and private support provided in the Nebraska Research Initiative.

Plant Improvement - The University of Nebraska has a number of nationally-recognized programs relating to plant improvement and a strong base of research faculty on which to build. Among the important work already being done in this area at Nebraska include research on control of plant viruses, photosynthesis, plant genetic engineering, and the dynamics of plant growth.

Animal Agriculture - Similarly the University of Nebraska has a long and distinguished history in the area of animal agriculture. Work at Nebraska has led to the development and successful commercialization of new and nutritious meat products, rapid and accurate diagnosis of diseases in cattle and swine, and marketing of widely used new vaccines.

Process Technology - Bioprocessing and new product development for agricultural products have received strong emphasis at the University of Nebraska. Nebraska scientists are engaged in developing industrial chemicals from biomass, creating new starch-based plastics with a wide range of uses and developing new value-added products from the plant and animal output of America's farms. These products range from biodegradable foam plastics to polymers, and they offer alternatives to oil-based production through the use of renewable agricultural resources.

Results from the Nebraska Centers

The Nebraska Centers for Science and Technology will provide a facility to support the University's biotechnology missions related to research and technology transfer. A central goal of the Nebraska Centers is the solution of practical problems which may have significant impact on the economy of the State and the nation. Through the Nebraska Centers for Science and Technology, we expect the following principal results:

First, basic research will result in new and expanded knowledge of the fundamental processes and relationships which occur in plants and animals, leading to an enhanced capacity for their management and improvement. Biodegradable foam plastics with a 60% starch base is one of our current projects. Turning ethanol into ethylene and into polyethylene is another. These are among several projects where we expect important research developments in areas where we can help the nation reduce its dependence upon oil. And they are only a few of numerous projects in chemical and genetic engineering where we anticipate significant developments in our Centers.

Second, new techniques will be discovered for combining, altering, and influencing biological systems and materials, physically or chemically. More efficient manufacturing systems for ethanol and other industrial chemicals from biomass are under development.

Third, products and processes will be developed which can be transferred from academe to private industry. This expanded knowledge base will contribute to the quality of life through improved diagnosis and treatment of animal and human diseases, more efficient production of food under less than optimum conditions, the discovery of renewable and affordable sources of energy, and the therapeutic and preventive measures such as bioremediation required to achieve a quality environment.

Finally, undergraduates, graduate students, and post-graduates at the University will have a state-of-the-art facility in which to further their science education and their research, and pre-college and undergraduates will be exposed to an exciting and rewarding scientific realm, and encouraged to pursue the sciences as a career option.

State of Nebraska Support

The State of Nebraska proposes to play a lead role in the national effort to develop and rapidly commercialize technologies through the initiation of a multi-disciplinary research effort. To sustain this, our Governor has pledged $60 million over five years for research and development in targeted areas. Twelve million has been appropriated in the last two years. The new funds will be added to the University's base budget in annual increments of $4 million. Thus, at the conclusion of the five year thrust, $20 million will have been added to the University's annual budget base for future support of the state research initiative.

In addition, the University of Nebraska Foundation has pledged to raise over $30 million for faculty and equipment to support Nebraska's research effort. The Foundation is over two-thirds of the way toward meeting this goal. The entire state and local contribution amounts to an unprecedented $90 million over the first five years in program funds for cost-share of which over $32 million is already in hand or committed.

We feel that this unique partnership of state, federal, and private support for new initiatives in areas of traditional excellence at the University of Nebraska will result in a highly successful education, research, and technology transfer effort.

Mr. Chairman, thank you for the opportunity to testify. We would be pleased to answer any questions you might have at this time.

Mr. **Bevill**. Thank you very much for a very fine presentation, and each of your prepared statements will be made a part of the record.

Mrs. **Smith**. Mr. Chairman, could I ask just one or two very brief questions?

Mr. **Bevill**. Yes, ma'am.

Mrs. **Smith**. I would like to ask this of you, Mr. Acklie. You are one of the top business people of Nebraska. What do you see as the benefit to the business community from this center?

Mr. **Acklie**. Well, Mrs. Smith, I think, first of all, with the new products and the new processes that could be developed and marketed, I think in our changing agriculture-based economy that is very important. Second, I think we need to keep up with our foreign trading partners. They develop new processes all the time, and it makes them competitive in the world market. We need to do that. Third, I think if you look at it, we need to be more concerned by our renewable resources, oil and production and marketing of environmentally sound products.

I think all of those things are something that can help. The other thing I would only say, there is a commitment, Mrs. Smith, and Mr. Bevill, and Mrs. Boggs, that the industry not only supports it, but they are willing to put their money behind it as well, as a partner.

Mrs. **Smith**. That is a very important point. Those all four were important points.

Mr. Fairfield, in what way is the foundation supporting this proposal?

Mr. **Fairfield**. Well, to pick up on what Mr. Acklie said, private support is a very important part of the partnership that we have developed with state, federal, and private support, and the trustee of the foundation approved a $30 million initiative for this project to be attracted over a five-year period.

We announced this initiative in August of 1988. We are very pleased that the people of the state and the alumni of the institution have come forth to this state with $20 million of that $30 million commitment in less than two years, providing support both for endowed professorships, and the designated and focused areas of this plan, also for graduate fellowships. The graduate students are going to be an important part of this component, and for endowed funds for equipment and research funds so that we can assure in the future that we do have a stable flow of income to nurture this plan that we present before you.

Mrs. **Smith**. Two-thirds of the money in two years is very good. Just one more question of you, Dr. Jones. Why do you think our University of Nebraska is a good investment—is a good place to invest federal dollars?

Mr. **Jones**. Mrs. Smith, I think I would respond to that in two or three ways, very briefly.

First, I would point out that we have demonstrated research leadership in these particular areas that this center is designed to pull together, and further these areas or these fields are of critical importance to the future of agricultural production, environmental and energy concerns, as well as plant, animal and human aspects of biology or if you like biotechnology.

As you have already heard, our demonstrated financial commitment from all levels of government and certainly state government and private sources, indicates clearly our willingness and ability to do as much as we can on our own to make this a reality, to pull our own weight, so to speak.

Finally, I think I would emphasize at the university we have a remarkable depth of experience in solving problems associated with agricultural productions, areas of alternate fuels, as well as production of non-oil based chemicals for industrial production.

I think this expertise places us—that is the university—in a unique position to offer the nation just that type of productive research that we are going to need as we look to solve or address the technological challenges and the environmental concerns which many observers see in the years ahead as we look to the 21st century.

Mrs. **Smith**. Let me say how much all of us appreciate it. We know that it is a 3,000-mile round trip to Nebraska. I know that very well, and we appreciate so much you coming in to be here with us today. Thank you.

Mr. **Bevill**. Yes, we're glad for each of your presences and thank you very much.

Mr. **Massengale**. Thank you, Mr. Chairman.

TUESDAY, APRIL 3, 1990.

NUCLEAR WEAPONS PRODUCTION AND SERI

WITNESS

HON. DAVID E. SKAGGS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF COLORADO

Mr. **Bevill**. Our good friend and colleague, Congressman David Skaggs, has come in. Dave, we're going to recognize you so you can get back on your schedule.

Mr. **Skaggs**. Thank you very much, Mr. Chairman. Good afternoon, Mr. Chairman, ladies.

I appreciate very much the opportunity to testify this afternoon. My concerns, as they were a year ago, have primarily to do with the level of effort and funding by the Department of Energy for the cleanup activities that are required at the nuclear weapons plant sites around the country.

Last year the subcommittee showed a great deal of sound and welcome leadership in responding to the requests from many of us to provide additional funding for these cleanup and waste management activities at the DOE's weapons facilities.

The subcommittee also doubled the funding for waste research and development which is the one prospect we have for perhaps finding some new cleanup technologies and holding down the costs of a problem that may rival the S&L crisis in the long run.

I think all taxpayers, especially those as in my district that live near one of these sites, should be grateful for the subcommittee's work on this area last year. When I was here last year I asked you to find a way to increase funding for these programs, given that DOE's budget request last year was woefully inadequate to the task.

I want to report to you today that I think the work that was done and the increases that were made in fiscal 1990 have made a very real difference in enabling the department, despite their own reluctant requests, to get on with the work that needs to be done.

That has certainly been the case of the plant in my district, the Rocky Flats plant, where work has begun on the cleanup of the most contaminated site at that plant, Hillside 881, a contamination site that ranks at the top of the Department's list nationally.

I wish I could be as optimistic in looking ahead to fiscal year 1991 based upon the budget submission that the Department has made for these programs for that year.

While DOE has proposed an increase, I don't think it will be nearly up to the task that faces them, and for that reason I am here again urging the subcommittee to make a significant increase in the Department's clean-up, waste research, and waste management programs.

Based on our knowledge of how much DOE has underestimated what is needed just at the Rocky Flats site to live up to their obligations, I believe we are going to need something in the order of a quarter to a half a million dollars in additional monies for these cleanup and waste management activities system-wide for fiscal 1991.

Let me just take a quick minute to lay out a little bit of the evidence that I believe supports that conclusion that the DOE's budget request is significantly understated here. First of all, the Department has itself admitted that it is asking for $142 million less than was anticipated in its own five-year plan as drafted last year.

So far we haven't gotten any concrete information from the Department of Energy as to what projects or work would be affected by that $142 million shortfall against their own five-year plan. They have made some general statements about lacking personnel or technology to get some of these projects underway, but really haven't been able to spell out, at least to my satisfaction, or with and budget quality work-ups, what is going on, what would be cut, by what amount, or why. And I fear that instead of needed and promised cleanup driving the budget request, budget constraints are driving DOE's ability to fulfill it's promises.

The Department's fiscal 1991 budget is based upon what I think we all recognize now is a dated assessment of cleanup requirements. It is based upon their August 1989 five-year plan which in turn incorporated work-ups that were prepared earlier last year or even, I suspect, as early as late in 1988.

Since that time the Department has signed new agreements with states on cleanup and waste management, agreements that were not included in the five-year plan on which their fiscal 1991 budget request is based, but which do require funding next year if they are going to keep those commitments.

Let me just cite Rocky Flats again as an example where I have a little more detail to work on. It wasn't until January of this year that the final touches were put on an interagency agreement between the Department and EPA and the State of Colorado, which we expect will be formally signed soon, spelling out the program of cleanup activities at Rocky Flats.

That agreement does anticipate new obligations on the part of the Department for cleanup during fiscal 1991, significantly higher than existed last August when the fiscal 1991 budget was prepared. Recent estimates by the Department's own Rocky Flats office, for instance, are that the Department will need over $200 million in fiscal 1991 to meet the cleanup and waste management obligations reflected in the interagency agreement. Yet the Department's 1991 budget request for Rocky Flats is just $89 million, less than half of what they recognize they will need to spend to meet the commitments they have made in that interagency agreement.

Mr. BEVILL. Dave, I am sorry to say your time is up. Could you wrap it up in about 30 seconds?

Mr. SKAGGS. You bet.

Let me just touch on one other item very quickly, Mr. Chairman, beyond this issue of cleanup at the plants, and that is to put in a plug for funding for the construction of a new laboratory for the Solar Energy Research Institute in Golden, Colorado.

SERI, as I know you are aware, has really done a terrific job with the facilities that they now have. If they are going to continue the kind of cutting edge work they have done and help us out of the impending energy crisis that we all believe is around the corner again, they really need to have this laboratory building, and I hope you will look favorable upon that request.

Mr. BEVILL. Thank you very much.

Mr. SKAGGS. Thank you, Mr. Chairman.

Mr. BEVILL. We will work with you to do the best we can.

Certainly your entire statement will be made a part of the record.

Mr. SKAGGS. I appreciate it.

Mr. BEVILL. Thank you very much.

[The statement of Hon. David Skaggs follows:]

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UNITED STATES
HOUSE OF REPRESENTATIVES

PUBLIC WORKS AND
TRANSPORTATION COMMITTEE

SCIENCE, SPACE, AND
TECHNOLOGY COMMITTEE

SELECT COMMITTEE ON CHILDREN,
YOUTH, AND FAMILIES

WHIP AT LARGE

Testimony of Congressman David Skaggs

before the
Subcommittee on Energy and Water Development

April 3, 1990

Energy Department cleanup and compliance agreements require additional resources in 1991

I want to thank Chairman Bevill and the Subcommittee for this opportunity to testify.

Last year, this Subcommittee demonstrated sound and welcome leadership in providing additional funding for cleanup and waste management at our nation's nuclear weapons facilities. The Subcommittee also doubled funding for waste research and development -- essential work if we're going to find effective ways to clean up DOE's contaminated sites and perhaps reduce what the cleanup will cost. All taxpayers, and especially those who live near one of these sites, should be grateful that the Subcommittee took these strong actions.

When I appeared before this Subcommittee last year, I urged you to find a way to increase funding for these cleanup and waste programs, given that DOE's budget request was woefully inadequate. I want to impress upon you today that these additional funds in 1990 have made a real difference at the Rocky Flats plant in my district. Without these funds, it would have been difficult for DOE to meet its obligations, under an agreement signed with the State of Colorado last June, to accelerate its cleanup work. One tangible result of this is that cleanup work at the most contaminated site at Rocky Flats, Hillside 881, began this year.

I wish I could be as optimistic about DOE cleanup funding for FY 1991. Unfortunately, while the Administration's budget for DOE cleanup in FY 1991 does propose an increase, I do not believe it will allow DOE to meet its obligations under the various agreements it has signed with several states. For this reason, I am again asking the Subcommittee to provide a major increase in DOE's cleanup, waste research, and waste management programs. Extrapolating from past and current DOE underestimates of what it could spend efficiently on cleanup just at the Rocky Flats plant, I believe a system-wide increase of between $250 and $500 million is needed and could be spent to good effect in FY 1991.

I want to briefly describe the evidence I have that DOE's cleanup and waste management program is underfunded.

First of all, DOE itself has admitted that its budget request for these items falls $142 million short of DOE's own 5-year plan for cleanup of the weapons complex. To date, DOE has been unable to provide any information about what projects or work will be affected by deferring that $142 million. While DOE officials have stated generally that some projects will need less money in FY 1991 -- usually for lack for qualified personnel or technology -- DOE has not been able to spell out what projects can be cut, by what amount, or why. Instead of needed and promised cleanup driving DOE's budget request, I am afraid the opposite is occurring.

Second, DOE's FY 1991 budget is based on its August 1989 5-year plan. Since the time that plan was put together, however, DOE has signed new agreements and taken on new cleanup and waste management obligations -- obligations not included in the 5-year plan or the FY 1991 budget, but which require funding in FY 1991. Also, further studies of contaminated sites have led to changes in what DOE estimates it will cost to clean up the sites, and these changes, usually increases, are not included in the budget.

Let me cite Rocky Flats as an example. It wasn't until this January that the final touches were put on an interagency agreement (IAG) that the EPA, DOE and State of Colorado expect to sign shortly. This agreement puts in place new obligations for 1991, obligations that are significantly higher than those included in the original 5-year plan and the 1991 budget.

Recent estimates by the Rocky Flats Area Office are that DOE will need about $208 million in FY 1991 to meet its legal obligations under the Rocky Flats IAG, yet DOE's 1991 budget for Rocky Flats proposes to spend less than half that, just $89 million. Now I'm willing to admit -- and I sincerely hope -- that DOE may find ways of getting this job done with less money. But the difference between $208 and $89 million is not nickles and dimes.

If DOE fails to live up to its agreements, we all lose. DOE will lose credibility, and the more constructive working relationship DOE is beginning to establish with many states and Indian tribes could be threatened. Worse, it would again put us in the position of fully funding weapons modernization while putting off environmental concerns.

Instead, we should be speeding up our efforts to assess contamination at weapons sites and, at the many sites where cleanup technologies are in hand and the assessments have been completed, we should be getting on with cleanup. As DOE has admitted, the longer we wait to proceed with cleanup, the further contamination spreads, and the more costly it becomes. I urge the Subcommittee to do what it can in this area.

It is not lost on the Colorado public that the extra $155 million DOE has requested for FY 1991 to solve production problems at Rocky Flats -- on top of a record-high production budget for the plant -- is close to 4 times the $41 million it has budgeted for cleaning up Rocky Flats. This skewing of priorities is eroding public confidence in DOE's commitment to environmental restoration and the public's willingness to continue to fund modernization activities. Given the changes in the world political climate, I expect the public will balk at new nuclear weapons programs unless Congress at the same time requires an aggressive and fully-funded effort to deal with past contamination.

While I am here today, I also want to speak in strong support of the DOE request to begin construction of a new and vitally needed laboratory building at the Solar Energy Research Institute.

If we are serious about reducing our national dependence on foreign oil, this laboratory is a must. For 12 years, SERI has built a solid track record of technology advancements in improving energy efficiency in buildings and transportation and in the development of more practical forms of renewable energy. But SERI cannot continue much longer to conduct its cutting-edge research out of renovated office buildings. Like any high-technology enterprise, SERI needs facilities that were designed for state-of-the-art chemical and solid-state physics experiments.

So I urge the Subcommittee to fully fund DOE's request for this project.

Thank you again, Mr. Chairman, for this opportunity to testify on these two issues.

TUESDAY, APRIL 3, 1990.

WASHINGTON PROJECTS

WITNESS

HON. NORMAN D. DICKS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WASHINGTON

Mr. BEVILL. I see our friend and colleague and a Member of the House Appropriations Committee, Mr. Norm Dicks, is here. Norm, we will recognize you. I understand you are chairing the committee now.

Mr. DICKS. I just got here. Thank you, Mr. Chairman, I appreciate that.

First of all, I would like to have my statement in the record, and I will summarize it.

I just want to say first of all that I deeply appreciate the support that this committee has given the State of Washington on a whole series of problems over the years. You have been very responsive, very kind, and it's appreciated in our part of the country.

My highest priority request this year is for funding to move forward in addressing the critical waste cleanup problem at the Hanford Reservation, and the funding is kind of ramping up.

It's going to be a problem for us all over the country. I know this committee has been at the forefront of trying to see that those problems are corrected.

And we recently found out that we may have a problem with the build up of hydrogen gases which could possibly lead to an explosion out at Hanford. We are very concerned about that and may want to talk to the committee later about that this year.

The budget, of course, calls for $595 million for activities at the Hanford Reservation to deal with cleanup, and that certainly is a significant amount of money. It's part of our effort to implement the tri-party agreement that has been reached with the state and EPA and the Department of Energy.

On a couple of other items, the budget addresses a number of issues that are important to ensuring that the Bonneville Power Administration continues to supply hydroelectric power at fair and reasonable rates to consumers.

We are once again asking this subcommittee to reject the President's request for a restructuring of Bonneville's repayment agreement. This would have a very negative effect on the economy of our area if we did that. Additionally, I ask the subcommittee to reject the Administration's request to restructure Bonneville's financing of its Conservation Program, which currently is about 70 percent capitalized and 20 percent expended.

The OMB request would add $25 million more to Bonneville's rate base without bringing in significant revenue to the Treasury. And I will certainly testify at this point that we would like to go forward with the construction of the Third AC transmission line on schedule and specifically support Bonneville's request for $67.6 million in fiscal year 1991 for construction activities related to the third AC.

I also support the Administration's request for $16 million for fish bypass facilities, including ladders and screens for juvenile fish, and believe that the request represents a very responsible position on the part of the Administration.

I was extremely pleased by your subcommittee's decision last year to provide $13 million for Phase 1 of the Grays Harbor Navigation Improvement Project. This channel deepening project is essential for the future growth of the Port of Grays Harbor which has been limited by shallow draft and navigation obstacles.

The second phase of the project involves removal of the Union Pacific Railroad bridge which obstructs the channel. The current plan is to replace it with the Union Pacific's bridge now located in Arkansas.

I urge the committee to support the Corps' request for $10.5 million to complete Phase 2. I also urge the subcommittee to support the Corps' request for $2 million for land acquisition on the lower Snake River and Wildlife Compensation Plan.

This will be the second year of a five-year acquisition program co-managed with the State of Washington designed to enhance wildlife populations.

Also, last year your subcommittee accepted Senate language on providing debt relief to the City of Aberdeen ruling from the delays in the transfer of operation, maintenance repair and rehabilitation of the Wynoochee Lake Project, and we are still working on that. We want to talk to the committee about that. And we have got some ideas about how we should proceed on that.

Finally, there are important programs in the budget that are being carried out in cooperation with Battelle Pacific Northwest Laboratory. Battelle will benefit from the $12 million in the President's request for research programs and address waste cleanup research and technologies.

And I specifically support the environment and molecular science laboratory which is requested at $5.2 million in the Environmental Waste management Budget.

So I know that is a long list, but I appreciate the committee's giving me this time to testify.

And again, I want to thank the chairman for all his help.

[The statement of Hon. Norm Dicks follows:]

Testimony of
Congressman Norm Dicks
Before the Energy & Water Appropriations Subcommittee
April 3, 1990

Mr. Chairman,

Thank you and the Members of this Subcommittee for once again allowing me to testify on appropriations requests under your jurisdiction that are important to the Northwest Region.

My highest priority request this year is for funding to move forward in addressing the critical waste cleanup problem at the Hanford Reservation. Although we are starting to make some progress in responding to the most severe areas of need, it is important for health and safety reasons to move aggressively towards a 30 year cleanup timeframe. Hanford is the largest storage site for radioactive wastes in the nation, and contains wastes of varied mixture. Some are highly radioactive and will remain deadly for thousands of years. Not only are many of these wastes inadequately stored in single-shell tanks, citizens in our region were greatly displeased to recently learn that there exists a real danger that a buildup of hydrogen gases in the tanks could lead to an explosion.

I am pleased that the President has included in his budget a generous request for $2.8 billion to address the nationwide waste problem at defense production facilities. This request includes $595 million for activities at the Hanford Reservation, and is significantly above the $325 million that Hanford received two fiscal years ago. This request will boost important projects such as the vitrification facility, and will ensure that its construction schedule remains on track. However, what is most important to the Washington State delegation and our Governor, is that DOE honors the Tri-Party agreement that was signed a year ago with the EPA and the State Department of Ecology. The State has raised questions as to whether or not the President's FY1991 request will sufficiently address the activities called for in the Tri-Party agreement. Therefore, I ask that the Subcommittee carefully review the Administration's request and adjust funding where necessary to ensure that the Tri-party agreement is not jeopardized.

The budget addresses a number of issues that are important to ensuring that the Bonneville Power Administration continues to efficiently supply hydroelectric power to the Northwest region at fair and reasonable rates to consumers. I ask that this Subcommittee reject the President's request to restructure Bonneville's repayment arrangements and accelerate them. If adopted, the repayment proposal would threaten the Northwest's economy and destroy rate stability. The low electric rates have served as a major incentive for attracting business to the region, and the Northwest has over 575,000 jobs in energy intensive industries. The OMB proposal would add at least $500 million to Bonneville's rate base, increasing wholesale rates by 35 percent.

Additionally, I ask the Subcommittee to reject the Administration request to restructure Bonneville's financing of its conservation program, which is currently about 75 percent capitalized and 25 percent expensed. The OMB request would add $25 million more to Bonneville's rate base without bringing in significant revenues to the Treasury. I ask that funds be provided to keep construction of the Third A.C. on target, and specifically support Bonneville's request for $67.6 million in FY1991 for construction activities related to the Third A.C. I continue to support the idea of "access" on the Third A.C., and believe that the President's request to require two-thirds ownership on the line is not in the region's best interest. I support the Administration's request for $16 million for fish bypass facilities, including ladders and screens for juvenile fish, and believe that this request represents a very responsible position on the part of the Administration.

The Corps' budget for this year includes $43,000 for a feasibility study for this project. Unfortunately, the original budget planning process did not adequately provide for fish run mitigation. A significant investment in enhancing this fish run has been made by the Muckleshoot tribe, the State Department of Fisheries, and others. This run would be greatly disrupted by increased water storage. For that reason primarily, a much more complex feasibility study is now required. The city of Tacoma is prepared to make $200,000 available this year as their contribution to the 50-50 cost share. Your subcommittee's assistance in increasing the Corps' match to $200,000 would be extremely helpful.

Last year, your subcommittee accepted Senate language on providing debt relief to the city of Aberdeen resulting from the delays in the transfer of Operation, Maintenance, Repair, and Rehabilitation of the Wynoochee Lake Project. The transfer process has proven more complicated than originally expected but negotiations are now on track for the OMR&R to be transferred in July. The city of Aberdeen, however, faces further unanticipated OMR&R costs caused by the continued delay of transfer. These costs are expected to reach $600,000. Mr. Chairman, I urge the subcommittee to extend the period of debt relief for the city of Aberdeen to cover the period from October 1, 1989 to the date of OMR&R transfer this year.

Mr. Chairman, I was extremely pleased by your subcommittee's decision last year to provide $13 million for Phase 1 of the Grays Harbor Navigation Improvement Project. This channel deepening project is essential for the future growth of the Port of Grays Harbor which has been limited by its shallow draft and navigation obstacles.

The second phase of the project involves removal of the Union Pacific Railroad bridge which obstructs the channel. The current plan is to replace it with a Union Pacific bridge now located in Arkansas. I urge the subcommittee to support the Corps' request for $10.5 million to complete Phase 2.

Additionally Mr. Chairman, I urge the subcommittee to support the Corps' request for $2 million for land acquisition on the Lower Snake River Fish and Wildlife Compensation Plan. This will be the second year of a 5 year land acquisition program, co-managed with the state of Washington, designed to enhance wildlife populations.

Mr. Chairman, two other Corps of Engineers projects which I would like to bring to your attention involve the Howard Hanson Dam and the Wynoochee Lake Project. The City of Tacoma is working with the Corps to increase summer storage capacity behind the Howard Hanson Dam to increase available water supplies.

Finally, there are important programs in the budget that are being carried out in cooperation with the Pacific Northwest Laboratory (Battelle). Battelle will benefit from the $12 million in the President's request for research programs that address waste cleanup research and technologies. I specifically support the Environmental and Molecular Sciences Laboratory , which is requested at $5.2 million in the Environmental Restoration/Waste Management Budget. This laboratory will serve as the centerpiece of DOE's scientific effort for developing cost-effective and innovative technologies to be applied toward environmental remediation.

I thank the Subcommittee for it's past support and look forward to working with you in the future.

Mr. **Bevill**. We will certainly work with you and do the best we can.

Mr. **Dicks**. We are still looking at the FFTF, trying to see if there is some way that they can justify it in the future, and we will want to talk to you later.

Mr. **Bevill**. Keep us posted on that.

Tuesday, April 3, 1990.

PHOTOVOLTAICS

WITNESSES

EDWARD J. CARLOUGH, GENERAL PRESIDENT, SHEET METAL WORKERS' INTERNATIONAL ASSOCIATION

EDWARD SABISKY, CHRONAR CORP.

Mr. **Bevill**. Next is Mr. Edward Carlough.

Mr. **Carlough**. My name is Edward J. Carlough, General President, Sheet Metal Workers International Association, a union of 150,000 members in the United States and Canada, with approximately 9,500 union contractors.

I am also Chairman of the Sheet Metals Workers National Pension Fund, which has assets of $1.6 billion, and further a member of the Board of Executive Committee of the Chronar Corporation, which is one of the leading manufacturers in the field of photovoltaics in our own country.

We have submitted our testimony, Mr. Chairman, with appropriate Members.

Mr. **Bevill**. Without objection, your prepared statement will be made a part of the record.

Mr. **Carlough**. Yes.

And in the brief time allotted to me, I would like to make a few additional comments. First, the Chronar Investment. The Sheet Metals Workers National Pension Fund and the International Brotherhood of the Electrical Workers Pension Fund have gotten together to have invested $75 million in the Chronar Corporation. In addition, the Sheet Metal Workers National Pension Fund has invested an additional $15 million in the Eureka process.

I understand that Congressman Fazio was called away at the last minute for an unscheduled committee meeting, and I want to thank him for the record for the great amount of help that he has given us and establishing the plant that is going into his congressional district in Fairchild, California.

I can summarize by simply saying this: In all the world, for the last year for figures that were available for photovoltaic, 30 megawatts were generated. This one single facility in the United States of America will generate 10 megawatts of electricity through photovoltaics, and the first panels will roll off the assembly line in June or July of next year.

In addition to the $15 million private investment in Eureka made by the Sheet Metal Workers National Pension Fund, in conjunction with our partners who are Pacific Gas Electric and Bechtel Company and Chronar. They are limited partners.

The National Pension Fund is a general partner, will be building a building in Fairfield, California, and will be spending an additional $25 million from pension monies in order to accomplish that objective.

This is by way of saying that we believe that ourselves and the IBW have demonstrated a fair amount of our own initiative in financing the operation and furthering the country's energy interests at this time.

We do support the R&D effort that is in the budget, and we further support the manufacturing production initiative, although I will say quite frankly that the manufacturing production initiative will not help our organization, nor will it help Chronar because we are ahead of the pack. But we believe it's good for the country, and we believe that we want to help our sister companies here in the United States of America, and we support that initiative.

We would like to point the committee's attention, though, to two points where you can help these two organizations and Chronar that have already spent considerable amounts of their own and private initiative and further the energy—reduce the energy problems in this country.

We need a large scale commercial power station project. We believe that it can fit in with the present PVUSA project. That is point one. That would be extremely helpful to our company and to the pension funds which have already expended and will expend in the neighborhood of $115 million to get the first 12 and a half square foot panel roller off the assembly line next summer in Fairfield, California.

Secondly, I had lunch last Sunday with Dr. Hamacara and Dr. Yamaka Sachi from the university in Japan, the leading university; and we discussed with the Japanese what we were doing in this field. They were very interested in what we were doing. We exchanged notes. We noted that with the progress that we made in testing of our panel, which is on its way to SERI right now for confirmation, that we are already three to four years ahead of Sanyo, which is the largest and the leading player in photovoltaics in Japan. We asked them what their future concentration was going to be, and it's in the same area as us. And that is in architectural.

The centralization power projects are immensely helpful. But the home run in this country, Mr. Chairman, we submit is the whole field of architectural products and the integration of photovoltaics in skylights, decking, siding, school buildings, so that we not only put the children in the building, we also help to pay for the heat and the light and the electricity through building design itself.

Right now the only project we have is in Sandia. Very little money is being spent on it. We would like to see the committee consider serious information on the architectural design, the integration of photovoltaics into the building community.

Finally, I would just say this: Thirty-five percent of the energy consumption in this country is in the heating and cooling of buildings.

You are addressing a similar problem in the whole question in the energy problem in this country, and furthermore, the number of U.S. players are shrinking right now. ECD, one of our competitors, is now owned as of the last couple of months, I think it's 80 or 90 percent by the Japanese.

Arco Solar, I know a superb competitor, has been bought out in its entirety by Siemens, the Federal Republic of West Germany.

It could well be that some of the research money that will be going to U.S. companies, companies on U.S. soil, will be going to foreign interests, and that is an area that the committee may want to explore at some time.

But Chronar is a United States company. The Chronar will provide jobs for American citizens, both in the manufacturing and the insulation end and will help the energy consumption problem of the company.

Sir, I appreciate very much the opportunity to be here today. If there are any questions, I would be very happy to respond.

[The statement of Mr. Carlough follows:]

Testimony

by

Edward J. Carlough

General President
Sheet Metal Workers International Association

and

Chairman
Sheet Metal Workers National Pension Fund

before

House Appropriations Committee
Energy and Water Development Subcommittee

April 3, 1990
Washington, DC

Mr. Chairman, members of the subcommittee, my name is Edward J. Carlough. I am the General President of the Sheet Metal Workers' International Association, AFL-CIO and Chairman of the joint Labor-Management administered Sheet Metal Workers' National Pension Fund. Our Union is comprised of over 150,000 members who work for some 10,000 union contractors throughout the United States and Canada. Our National Pension Fund has assets of $1.6 billion.

The mainstream of our Industry's work is the fabrication, installation and maintenance of heating, ventilating, and air conditioning systems. Additionally, we are involved in architectural sheet metal and are providers of services including air balancing, energy management, and indoor air quality. In summary, the bulk of our Industry's work is involved with the energy used to heat and cool buildings. This energy-use sector accounts for 35 percent of the annual energy consumption in this country.

Because of our Industry's vital interest in the efficient use of energy particularly as it relates to the heating and cooling of buildings, we have invested over $100 million during the past two decades in the development of training programs, services and technologies to ensure that our members and contractors will continue to be the leading edge of the industry.

Most recently, and pursuant to extensive financial and technical due diligence reviews, our Industry via our National Pension Fund has become one of the two largest institutional investors in the Chronar Corporation, a publicly-held company devoted entirely to the research and development of the thin-film photovoltaic technologies and to the marketing of photovoltaic-powered products and systems. In addition to our investment in Chronar, we have funded the development of the most advanced photovoltaic panel/module production plant to date for the entire world. This production line is presently being assembled and tested by Chronar at its headquarters in New Jersey.

In 1991, this production line, code named Eureka, will be installed in a state-of-the-art production and technology facility in Fairfield, California. Participating along with the Sheet Metal Workers' Pension Fund in this $30 million enterprise are Pacific Gas & Electric Enterprises, Bechtel Development Company, and Chronar.

Presently, the international standard for a thin-film photovoltaic panel/module production line is 1 Megawatt per year of production capacity. The Eureka line will have a minimum annualized production capacity of 10 Megawatts with an initial stabilized efficiency of 5 watts per square foot at a fully-loaded cost of $1.00 per peak watt. This will put the production cost of bulk power in the range of 10 to 12 cents per kilowatt hour.

Sheet Metal's investment represents a major, long-term commitment to the research, development and commercialization of the thin-film photovoltaics technology. I appreciate the support of this Subcommittee and your efforts to maintain and enhance the federal cost-shared program with the photovoltaic industry. I also welcome the attention and support shown thus far by the Bush Administration. I urge you to support the FY' 91 Administration request for photovoltaics. Additionally, I urge you to weigh carefully the need for additional support in the commercialization of grid-connected, large-scale applications integrated in the design and construction of buildings and for central power station systems.

Unfortunately, too many people believe that once technical and cost-reduction targets have been met that the role of the government should be either significantly reduced or eliminated. This simply should not be the case. Particularly, in the context of the extreme urgency with which this country should be addressing the danger of extreme over dependence on foreign sources of oil; the need for environmental clean up and protection; and the need for clean sources of bulk electrical power.

Even for a luxury item such as television where there is great consumer interest and no institutional resistance to market penetration, it is well documented that the cost for taking a product to market and achieving a significant market share is typically much more costly than the research and technology development costs required to produce the prototype product.

The urgent need for a secure and environmentally clean source of electricity to supply the energy used for operating buildings and to supply bulk-power needs for industry is clearly evident. The question is how best to accelerate the pace at which the photovoltaics technologies can be brought to market on a widespread scale.

The U.S. government-industry research and development program has been very effective in achieving the projected efficiency and cost-reduction targets. The production cost has dropped by a factor of ten in real terms to a selling price of $4-$5 per peak watt in 1989. World-wide shipment of modules has increased a hundred-fold since 1976 to an estimated 42 megawatts in 1989. Unfortunately, the U.S. share decreased from about 70% in 1981 to about 33% in 1989. Thus, we have an increasing PV world market, but a decreasing U.S. market share.

The United States is in a race with Japan and western Europe in the development of the photovoltaic technologies for large-scale applications and central power stations. Worldwide, it is a multi-billion dollar market. The governments of Japan and West Germany do not intend to lose this race.

I urge this Subcommittee to fully support and enhance the federal government's core research program on thin-films including amorphous silicon, fundamental, and high-efficiency research in partnership with the photovoltaics industry.

Additionally, the limited work being performed by the Sandia National Laboratory PV Design Assistance Center is of a particular importance. It is absolutely crucial that additional resources be allocated to integrating photovoltaic applications into the design and construction of all types of facilities. As stated earlier, 35 percent of the energy consumed annually within the U.S. is for the heating and cooling of buildings. With the efficiency and cost targets that will be met by the Eureka panel production line, this market for large-scale applications including curtain wall, skylighting, atriums and roof-top arrays represents both an immediate and long-term market of vast potential. A much larger effort is needed to ensure the development and testing of these types of applications. In addition, to the technical work that will be required, a major educational and technology transfer effort will be required with the architectural, engineering, and construction professionals. Additionally, there are a vast number of other key players involved in the decision process including for example: developers, planners, and utility-system engineers and analysts. These disciplines affect the pace at which large-scale photovoltaic applications and systems will be utilized. It is essential that the government participate in a significantly more aggressive cost-shared program with the photovoltaics industry and these various disciplines to bring this about.

With respect to grid-connected central photovoltaic power stations for the generation of bulk electrical power, the PVUSA project has been very helpful in testing and addressing a number of very significant technical and cost issues. It is essential that larger-scale tests be undertaken in a cost-shared program with the photovoltaic industry and utilities or power suppliers to advance the acceptance of large central photovoltaic power stations by the utility industry. This will be essential to the scale-up of panel/module production capacity and to overcoming the institutional inertia and resistance of the utility industry to new technologies.

Without an aggressive government-industry-utility initiative, the scale-up of the panel/module production capacity will be seriously jeopardized and the opportunity to provide an environmentally clean bulk source of electrical power will go untapped. Utility-scale tests are vitally important to ensuring the near-term success of the Sheet Metal Industry's investment in this technology. Likewise, they are vital to the ultimate success and pay off of the proposed DOE manufacturing/production scale-up initiative.

The U.S. based photovoltaics technologies are at a crossroads, it is a technology still largely unfamiliar to the electrical utilities; the industry is small and not self-supporting; large investment capital is very difficult to attract because of risks associated with new energy technologies; and a major market is virtually controlled by utilities. The situation is further compounded by foreign governments, as well as foreign companies increasing their commitment to position themselves to capture market share.

I applaud the Bush Administration for recommending an increase in funding for photovoltaics for the first time in eight years by recognizing the importance of resolving panel/module/production issues. We support this new trend in government support, as well as its new direction and look upon it as the genesis of a much larger government - industry - utility program. Energy is one of the largest businesses in the U.S. and the world. The size of the commitment to bring about change in the utility industry must be cognizant of its size and the commitment should reflect the size and complexity of the task.

The Sheet Metal Industry has made a major commitment to the research, development and commercialization of thin-film photovoltaics technology. We recognize that it is a long-term commitment. However, the needs and the opportunities are immediate. The cost-shared government-industry program has been very successful in accomplishing technical and cost targets. While it is imperative to continue the core research and development program, it is also imperative that the Congress in concert with OMB and DOE set aggressive commercialization targets and marshal the resources of government, industry, and utilities to bring to market a minimum of one gigawatt of grid-connected photovoltaic power by the year 2000. This should be a stated and publicized commercialization target with a focused, jointly sponsored effort to make it a reality.

Thank you.

Mr. Bevill. Thank you very much. Very fine presentation.

What is that panel which you have there?

Mr. Sabisky. It's the largest solar panel ever made by anyone. It is made by Chronar. It produces 70 watts in power and will be sent out to the Solar Energy Research Institute to be tested next week, and these are the kind of panels that we will be producing next year.

Mr. Carlough. This is the panel that is putting us about three or four years ahead of Sanyo. We are not kidding ourselves.

Mr. Bevill. We will work with you the best we can.

Mr. Carlough. Thank you, sir, Mr. Chairman.

Tuesday, April 3, 1990.

BASIC ENERGY SCIENCES

WITNESS

FREDERICK LEAVITT, EXECUTIVE DIRECTOR, COUNCIL FOR CHEMICAL RESEARCH

Mr. Bevill. Dr. Leavitt.

Mr. Leavitt. Mr. Chairman, Members of the subcommittee, my name is Fred Leavitt, and I am Executive Director for the Council for Chemical Research. My career has been entirely in industrial research and related activities, and I am pleased to be able to appear before you today regarding the DOE's basic energy science budget.

The Council for Chemical Research is an 11 year old organization dedicated to improving the U.S. economy, and we do this by strengthening interactions between academia and industry and by fostering support for basic research in chemistry and chemical engineering. Our membership represents 157 universities, which carry out fundamental research in these fields and 55 major companies which do most of the corresponding industrial research.

We may be having some impact. In the last two years, chemistry's already remarkable contribution to the U.S. trade balance went up by two-thirds to $15.7 billion.

Part of my message is straightforward. This Nation's energy supply will be in trouble beginning soon after world petroleum products peaks about the year 2000. The research for the basic information required to bail us out requires years of effort and is underfunded.

The supply of people prepared for this research is dwindling, but can be replenished through the training gained in basic energy for science research if BES is adequately funded.

The importance of basic research should not be underestimated. It provides the knowledge base for people developing future energy operations and new energy technologies.

As everyone concerned with energy knows, the consequences of inadequate energy are measured in hundreds of billions of dollars, and we believe the correction needed in funding of BES is measured in only tens of millions of dollars.

Science and engineering indicators for 1989 published by the National Science Foundation report that only 3 percent of Federal

R&D funds are allocated to activities in the energy budget function, and only 6 percent of Federal basic research funds are so allocated.

Considering the enormous impact of energy, this seems strange to us. Research in the chemical sciences' part of BES lost 12 percent in constant dollars during the 1980s. Research in materials sciences rose by only 3 percent. These figures distinguish between the support of research opportunities and efforts and the support operating major facilities for user scientists.

In the fiscal year 1991 request, we are alarmed to see that the support for research and chemical sciences and material sciences falls below the 1990 level. The major part of the requested BES increase is assigned to user facility operations which are, of course, vital to the programs.

The Council believes that correcting the deficiency in research itself can only be accomplished in a few annual steps of $25 million allocated among chemical sciences, material sciences and emergency biosciences.

A word about the user facilities is in order. These are such facilities as the combustion research facilities, the synchrotron radiation facilities and the neutron scattering facilities. They provide unique research capabilities for the most fundamental measurements and the atomic and molecular level. BES has an excellent record of facility construction and management, using the best advice available on what facilities are needed and how they should be configured for optimal research.

These costs are justified by the facilities role as unique tools for visiting scientists, keeping the U.S. competitive in high technology. Especially valuable at this point, as has already been mentioned, is the environment and molecular laboratory at Richland, Washington. This is a center for the important cleanup effort at DOE weapon sites.

It brings into close proximity the immediacy of technology development and the long-range, basic research.

It also opens the door for technology development to tap creative Nobel Prize talent of chemical sciences around our country.

To return to the overall energy theme for a moment, I should quickly give you a taste for the kinds of energy research being carried out which required deferral——

Mr. Bevill. Your time has expired. Can you wrap it up?

Mr. Leavitt. Yes, sir. I would be more than happy to.

I would like to say that technology and personnel are being produced for our country's energy effort by these activities I described, and we feel that it should be further funded and somewhat beyond the levels requested for the 1991 budget.

Thank you.

Mr. Bevill. Thank you very much, sir.

[The statement of Mr. Leavitt follows:]

THE COUNCIL FOR CHEMICAL RESEARCH

TESTIMONY OF DR. FREDERICK C. LEAVITT

ON THE DEPARTMENT OF ENERGY'S
FY 1991 REQUEST FOR BASIC ENERGY SCIENCES

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

COMMITTEE ON APPROPRIATIONS

U.S. HOUSE OF REPRESENTATIVES

THE HONORABLE TOM BEVILL, CHAIRMAN

APRIL 3, 1990

Mr. Chairman and Members of the Subcommittee:

My name is Fred Leavitt. I am Executive Director of the Council for Chemical Research. Prior to this, my career was in industrial research and related activities. On behalf of the Council, I am pleased to comment on DOE's Basic Energy Sciences (BES) FY 1991 Budget Request.

The Council for Chemical Research works hard to improve the U.S economy, competitiveness and quality of life by strengthening interactions between academia and industry, and by enhancing support for fundamental research in the molecular sciences and engineering. The Council includes 157 universities doing basic research in chemistry and chemical engineering, and the 55 major companies doing most of the industrial research in these fields.

We are urging the Congress to increase BES funding by $25 million above the FY 1991 request.

Mr. Chairman, in a nutshell, we face, probably in this decade, some very serious energy problems measured in hundreds of billions of dollars. I shall speak of them a little later. Only new basic knowledge will make possible their solutions, and the necessary research will take years. What is needed is adequate support for the research component of BES. (Its facility component seems well supported.)

The benefits of BES-supported research are found not only in energy applications of the discovered knowledge but also in the education and training of the Nation's future scientists, engineers and teachers. U.S. industry has for years benefited from the influx of high quality researchers who earned their doctoral degrees while working on BES-supported projects.

Thus a strong and forward looking BES program is also essential as a strong partner to the National Science Foundation, for maintenance of science's human infrastructure. Well prepared people are needed to continue chemistry's outstandingly positive balance of trade ($15 billion in 1989) and the overall strength of the U.S. chemical industry, which employs over a million people and continues to add to U.S. health, food, quality of life, and knowledge of global climate and environment.

Reasons for Budget Recommendation

Research activities supported through Basic Energy Sciences are being badly squeezed. Especially is this true in Chemical Sciences and Materials Sciences, where the FY 1991 request for increased funds targets important facility needs. Research itself would fall below the FY 1990 level, even before inflation.

While for good reasons, detailed below, the Council for Chemical Research supports the proposed increases for facilities operation and construction, we are very concerned about the continuing underinvestment in energy-related research. Items:

> Science and Engineering Indicators - 1989 (National Science Foundation) reports only 3% of Federal R&D funds allocated to activities in the Energy Budget Function, and only 6% of Federal basic research funds so allocated.
>
> Chemical Sciences annual research funding (not facility operations) declined by 12% in constant dollars during the 1980's. In Materials Sciences it rose, but only by 3%.
>
> Unaddressed scientific opportunities may cost us many $100's of billions in energy. Adding $20 millions to BES research funding, as recommended by the Basic Energy Sciences Advisory Committee, would be modest indeed.

In the past, the Council for Chemical Research has not been overly concerned about this underinvestment, because of the strengths of the National Science Foundation and Defense programs in energy-related areas of chemistry, materials sciences, and chemical engineering. However, over the past few years NSF and DOD funding in these critical areas has also been squeezed by budget pressures, in spite of the Administration's commitment to double the NSF budget in constant dollars.

Facilities

The good news about the Administration's FY 1991 budget request for BES is that it includes a healthy increase for operation and construction of research user facilities. The Council for Chemical Research is pleased to see this for several reasons:

BES has an excellent record of facilities management: they obtain the best advice and follow it.

The user facilities are open to researchers from industry, academia and the National Laboratories.

The facilities provide unique research capabilities and enable the most fundamental measurements at the atomic and molecular level. Construction and operation costs are justified by the facilities' role as unique tools for visiting scientists, keeping the U.S. competitive in high technology industries which use, for example, x-ray lithography, polymer dynamics, and chemical catalysis).

Chemists and chemical engineers are particularly interested in the unique research environments offered by the Combustion Research Facility, the synchrotron radiation facilities, and the neutron scattering facilities. In addition, BES support for high performance computing facilities and networking is producing significant advances, plus a generation of highly trained computational scientists and engineers who are in high demand. With a major impact on the modeling of chemical phenomena at the molecular level, near term dividends include development of optimal strategies for toxic waste disposal, environmental restoration, clean air, and global warming.

The Council for Chemical Research urges a high priority for the full BES request for facility construction and operation.

Yet the support of research in the facilities is distinct from the support of facility operations. Further, the science pursued at a user facility is typically but a very important element in a much larger research effort. A major increase in the BES research support program is essential if scientists are to be in a position to capture the most significant benefits from use of these impressive and expensive user facilities.

Environmental and Molecular Sciences Laboratory

DOE's Environmental Restoration and Waste Management (ER&WM) includes a most important Technology Development Program for aggressively carrying out applied research and development. Seeking rapid advancement beyond current technologies, it sponsors research at sites including the Environmental and Molecular Sciences Laboratory at Richland, Washington. This promising new user facility is an excellent source of insights and new ideas. The Council for Chemical Research enthusiastically supports the ER&WM request for Technology Development.

We are therefore pleased that BES' Chemical Sciences Division supports creative long range research in areas important to ER&WM, at universities and National Laboratories. Chemical

Sciences also sponsors certain research projects at the Environmental and Molecular Sciences Research Center itself. Thus the Center combines the breadth of Chemical Sciences' research with the immediacy of Technology Development's concerns. Their sharing of problems and insights will lead to earlier flowering of pertinent new ideas. The groups at Richland will also draw on related knowledge and Nobel Prize-winning creativity of colleagues around the country.

A far-reaching example of this promise is the lowering of costs of removing toxic substances from soils around DOE sites. Soil contaminants are usually present in a variety of chemical states. Removal attempts would fail if it were assumed that each contaminant is in a single chemical form. Similarly, text-book analysis of chemical states, followed by textbook removal chemistry, would usually lead to expensive and incomplete cleaning. But the collaboration at Richland and elsewhere will economically provide sophisticated methods tailored to the local specifics.

Research Directions

Existing opportunities, thus far unexplored for lack of funds, have strong implications for the economic well-being and energy security of the country. The National Research Council has made thorough studies that bear this out in convincing detail. Two examples are "Frontiers in Chemical Engineering" (1988) and "Opportunities in Chemistry" (1985).

New energy knowledge is vital as petroleum dwindles. The Council for Chemical Research is acutely aware that 90% of U.S. energy is based on chemical processes, and will continue so for decades to come.

We now import over half our petroleum feed stocks. This will continue to worsen, even with better conservation. Imports themselves will not last very long: world petroleum production will peak sometime around the year 2000. **Rescue from disaster, meaning new energy sources, will arrive on time only if we solidly encourage the necessary long-term basic research now. Research normally takes years to reach fruition.**

The kinds of research of which I speak aim at a wide range of knowledge and energy concerns:

> Chemical knowledge that can raise the amount of oil recovered from oil fields;
>
> Photochemistry to enable use of sunlight and water to produce hydrogen, the cleanest of all fuels;
>
> Chemical physics for cleaner combustion;

Biochemically sped up tree growth, for global climate;

Catalysis underlying more economical conversion of coal into clean automobile fuels;

Analytical methods for tracking pollutants and for understanding global climate change.

So we are alarmed to see that, in the FY 1991 request, support for research in Chemical Sciences and Materials Sciences falls below the 1990 level. The overall increases are more than absorbed by the costs of operating major user facilities.

Personnel

Right now, we have the human resources and creativity to seek solutions for our energy future, but the resources are dwindling and must be nurtured.

The BES research programs play a major role in the pipeline of well prepared people for science and technology. The BES funding levels, particularly those in colleges and universities, have a significant impact on the number and quality of students graduating with skills in the energy related disciplines. While the Council for Chemical Research does not support massive Federal efforts to increase the number of energy professionals, it does commend BES on its efforts to improve the quality of the research experiences available to research students in the energy related disciplines, including access to its user facilities. In addition, DOE efforts to attract women and minorities into energy careers are important and need continued funding.

Personnel shortages are already being experienced in two critical areas: nuclear chemistry and radiochemistry. People trained in these fields are much needed for medical applications of radiochemistry (1 in every 5 hospital admissions), the nuclear power and process industries, and safety needs at DOE sites.

Summary

For 5 reasons (squeeze on vital research, enormous impact of inadequate energy research, importance of user facilities, cleanup of DOE sites, trained personnel shortfalls) we ask that the Subcommittee urge the Committee on Appropriations to find a $25 million increase for Basic Energy Sciences now, before our energy options and technological competitiveness erode further. This cost is truly modest in the affected framework of energy, economic well-being and national security.

Mr. Chairman, I thank you and the other Members for this opportunity to express the views of the Council for Chemical Research.

Tuesday, April 3, 1990.

DOE PROGRAMS

WITNESS

DAVID C. HARRISON, SENIOR POLICY ADVISOR, THE COUNCIL FOR ENERGY RESOURCE TRIBES

Mr. Bevill. Mr. David Harrison.

Mr. Harrison, if you can wrap your presentation up in a short time, you can make some brownie points.

Mr. Harrison. All right, sir. I appreciate that.

When I listen to the magnitude of the issues that this committee deals with, it's just amazing that you even take the time to listen to me at all. But we are being very grateful to this committee over a time.

For a number of years, this committee directed the Department of Energy to provide the Council of Energy Resource Tribes, an organization made up of 44 tribes around the country, with some quarter of a million dollars a year from their intergovernmental activities operation. And that money has been absolutely indispensable in a great many of the success stories we think we have had out there.

Over the years, we have been able to work with industry organizations and partners. We have begun working with the governors of the western states through their Western Governors Association, with industry organizations such as the American Petroleum Institute, the National Coal Association, et cetera; in fact, even the Council of Petroleum Accountants Society and some of their more recent textbooks that have been developed by the tribes in order to make it easier for industry to do business.

We still have a substantial energy production on Indian lands, and we feel like we have substantial significant potential for even more production, especially in the areas I have just been listening to here.

We have got some solar potential out there when the technology and the economics make it right. And a good many of these activities we have engaged in have not come within the traditional parameters that you would think the Department of Interior would be interested in supporting the tribes with.

We feel like we have made just great progress in improving relations with our surrounding states and other units of government and with our industry partners.

And we have been able to make that little bit of money go a long ways in generally making this energy production from our lands more compatible with our system of government.

We have reduced tremendously the number of fights, the numbers of cases that get to the Supreme Court every year, although we still have one or two. But we are making great progress in that area.

The last Administration dropped this activity, and we are asking that one more time to direct the Department to provide us with $450,000, which is just, as I say, compared to what you are dealing with, it seems so little yet we think with that amount of money, we will put it to very good use.

And we will prevent a lot of other problems. And one other thing I would like to ask permission, or to work with your committee in the months ahead if the committee is willing, that is we have just recently gotten a report from the defense contractor audit agency on a project that our organization did almost, began almost ten years ago. Completed it in 1983. There is a little bit of liability there.

Mr. BEVILL. I am going to have to go and vote. I don't want to cut you short. I will be back, if you want to finish.

Mr. HARRISON. I believe that pretty much does it. I have my statement in record, and I can work with the committee and the staff.

[The statement of Mr. Harrison follows:]

STATEMENT OF DAVID C. HARRISON OF THE COUNCIL OF ENERGY RESOURCE TRIBES BEFORE THE SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT OF THE COMMITTEE ON APPROPRIATIONS, UNITED STATES HOUSE OF REPRESENTATIVES, WASHINGTON, D.C., MARCH 7, 1990

Good afternoon, Mr. Chairman and members of the Committee. The Council of Energy Resource Tribes is composed of 44 federally recognized tribes with substantial production of oil, gas, and coal; substantial uranium reserves; and significant potential for solar and hydropower production.

For many years, until Fiscal Year 1988, the Council of Energy Resource Tribes received an annual contract of $250,000 from the Department of Energy from the Intergovernmental Affairs activity appropriated for Departmental Administration of the U.S. Department of Energy. The previous Administration began to resist this activity in FY 1987 and succeeded in FY 1988 in eliminating this activity from the Department's activities.

We have been able to work with the present Administration in a number of areas, and have participated in their hearings for development of a National Energy Strategy. In addition, our work continues to bring us into constant contact with industry and Administration officials in the effort to continue the prudent and environmentally sound protection, development, and management of our energy resources. We have, for instance, worked with the National Coal Association on coal valuation procedures and in developing policies for the growing independent power production industry. We have worked with standing committees of the American Petroleum Institute on matters involving oil and gas valuation and excise tax policies. We have worked with FEMA, the Department of Energy and the Department of Transportation on matters involving the transportation of nuclear waste and radioactive materials across our reservations, where our local police and medical personnel may often be the closest reaction force for hundreds of miles. We have worked with the pipeline industry on matters affecting rights-of-way across our reservations. We have also worked closely with such regional industry organizations as the Rocky Mountain Oil and Gas Association; the Independent Producers Association of the Mountain States; the Montana Oil and Gas Association;

and the New Mexico Oil and Gas Association. In addition, we have worked with our neighboring and surrounding governments on matters of mutual concern. In fact, we have met with the Western Governors Association on taxation and regulatory matters and even drafted a Memorial to the Congress on behalf of the House of Representatives of the State of New Mexico regarding the pressing issue of multiple layers of taxation of reservation production.

A great many of our efforts ~~directly~~ involve issues with which the Department of Energy is actively involved. In fact, a year ago this month we suggested at a policy forum sponsored by the CERT tribes that the Department should focus its oil and gas research activities on preserving the life of currently producing, domestic onshore fields. Along with the industry representatives, state agencies, and professional institutes we have worked with, we were very pleased recently to see the Department announce that this would be the focus of the Department's oil and gas research during the 1990's. On the other hand, we have yet to bring the fruits of developments in this area, or the benefits of the successful research that the Department has already sponsored, to our reservations. We believe that Indian lands still have much to contribute to the nation's domestic oil and gas production. The value of onshore oil and gas production from Indian lands in the lower 48 states is some $700 million per year now, and if we could replicate some of the successes of DOE-sponsored research in horizontal and targeted infill drilling, we believe that our lands would continue to be productive far longer than if allowed to be plugged and abandoned at the the current, alarming rate.

We also have some very active plays underway for developing coal bed methane. From the Fruitland Formation in the San Juan Basin in the Four Corners Area to the great outcrops throughout the Powder River Basin to the lignite beds on the eastern end of the Fort Union Formation, Indian lands have enormous, but untried, potential for production of clean gas from this unconventional source. We would also like to continue to work with our industry partners in participating in the Clean Coal technology research that the Department sponsors. Many tribes have the opportunity to join the ranks of independent power producers to utilize their abundant coal reserves in environmentally sound ways to contribute to the nation's domestic energy security.

The tribes themselves devote substantial amounts of their precious and scarce financial resources to these and other energy-related activities. Many of these activities, of course, are related to programs within the Department of Interior, but others simply do not fit any of the budget categories of that Department. The Osage Tribe in Oklahoma, for instance, has one field that the operator has proposed to abandon after an unsuccessful waterflood attempt. An engineering firm that does a great deal of work for DOE's Bartlesville Project Office, for the Interstate Oil Compact Commission, and with the National Institute for Petroleum Energy Research has advised the tribe that up to another one million barrels of oil should be recoverable from this field. The Bureau of Indian Affairs has advised the tribe that assistance with finding a responsible operator for this field does not fit within the range of activities conducted by that agency's Division of Energy and Minerals.

In other words, Mr. Chairman, the range and level of activities which the tribes conduct with the modest level of assistance which DOE has made available through the years with the help of this Committee have paid substantial dividends and enabled them to participate constructively and cooperatively in important industry-wide, regional, and national deliberations in a way that would otherwise be impossible. For these reasons, we are requesting this Committee once again to direct the Department of Energy in Fiscal Year 1991 to direct the Department of Energy to make available to the Council of Energy Resource Tribes $250,000 to assist meeting the expenses of these activities.

In addition, we have an additional request to make of the Committee this year. For a number of years, we have carried on our books an unaudited liability in the form of a grant payable to the Department of Energy resulting from our inability to secure an audit of a substantial study of the feasibility of a coal-fired synthetic fuels project on the Crow Reservation. Since early 1983, when this project was completed and the product received and approved by the Department of Energy, we have attempted to secure an audit of this activity by the Defense Contracting Audit Agency. Our audit needs just have not received any priority when measured against those of such installations as Hanford, Rocky Flats, Savannah River, WIPP, and other major activities of DOE. Finally this year, DCAA showed up and told us that we have a liability of $241,397 on this three-year, $2,718,600 project. Everyone that we utilized on this job, including Pacific Coal Gasification, the Fluor

Corporation, Lehman Brothers, and the Crow Tribe has long since closed their books on this job, and we fear that we are not going to be able to satisfy DCAA six years after the fact that we, too, should be able to close out this activity without substantial liability. The product was produced within the budget allocated and was approved by the Department's technical people without criticism or complaint. We did make every effort to secure a timely audit of the project and simply did not warrant timely attention in light of the other demands upon DCAA. For these reasons, we are requesting the Committee, either in the appropriations bill or in appropriate report language, to direct that this activity be closed out without liability to the Council of Energy Resource Tribes.

On behalf of the 44 tribes of the Council of Energy Resource Tribes, I want to express my appreciation for the assistance this Committee has provided in the past. I shall be glad to answer questions the Committee has, or to provide any information for the record that might be helpful in your deliberations. Thank you very much.

Mr. **Bevill**. Thank you very much.

We will stand in formal recess here, and we will be back in about 15 minutes.

[Recess.]

Tuesday, April 3, 1990.

MAINTENANCE DREDGING

HARBOR MAINTENANCE TRUST FUND

WITNESSES

DeWITT D. BARLOW III, PRESIDENT, NATIONAL ASSOCIATION OF DREDGING CONTRACTORS

ROBERT E. LOSCH, COUNSEL, NATIONAL ASSOCIATION OF DREDGING CONTRACTORS

Mrs. **Boggs** [presiding]. Mr. Barlow, we would be very happy to hear from you.

Mr. **Barlow**. I would like to ask that my formal statement be made part of the record.

I am appearing here today, and accompanying me is our association's counsel, Bob Losch. We appreciate the opportunity to testify before the committee.

As you know, we have not appeared here in the last few years. However, this year we feel it important to express our concerns over the current status of the Corps of Engineers maintenance program.

The dollar amount of maintenance work as performed by the dredging industry during the six-year period from 1984 through 1989 has steadily declined from $376 million to $227 million. This represents a dramatic 39 percent reduction in the funding applied to the navigation mission. We would also point out that whenever there were reductions in the operation and maintenance general account due to budgetary constraints, the Corps takes the cuts out of that portion of the maintenance dredging that is to be performed by industry.

As a result, a substantial number of Federal navigation projects are being deferred from one fiscal year to the next ad infinitum. The deferral of the essential maintenance dredging projects threatens the preservation of our navigational infrastructure and results in costly delays to maritime traffic.

It's important to emphasize that it's the dredging industry that takes the brunt of the funding cuts made in the maintenance dredging program. The work assigned to the Corps of Engineers minimum fleet is not reduced, and the Corps continues to operate as usual without any cutback in the operational schedule for its dredges. To be equitable, the operational schedule of the Corps minimum threat should be reduced in view of budgetary constraints.

Not all of our concerns with the Corps' maintenance dredging program are attributable to budgetary constraints. In the last fiscal year, there were significant disruptions to the program due to other factors. At the outset of fiscal year 1989, the Corps released $200 million to its Division Engineers without providing specific instructions as to how the funds were to be expended.

Consequently, a significant part of these funds were allocated to unbudgeted projects not related to the maintenance dredging program or the navigation mission.

As a result of the diversion of funds from the dredging program in fiscal year 1989, there was a substantial shortfall of funding available for maintenance dredging to be performed by industry which caused a temporary suspension of advertisements.

The Corps, in 1989, budgeted $279 million for the maintenance dredging program to be performed by industry. The actual amount expended was only $227 million. As a result, 45 projects were cancelled and rescheduled for the following year at an estimated cost of $25 million.

The Corps was forced to cancel these projects primarily because of the lack of funds, notwithstanding the fact that industries' bids on jobs advertised in that year were $26 million or 10 percent less than the government's cost estimate without profit.

Mrs. Boggs, we wish to make it clear that our comments are not intended in any way to be critical of the Corps of Engineers Headquarters' staff. Our comments and recommendations are offered in a constructive way to enhance and strengthen the maintenance dredging program.

We have two specific suggestions. We strongly urge the committee to earmark or clearly define the total funds appropriated for maintenance dredging of channels and harbors to avoid the continued deferral of substantial maintenance dredging projects from one year to the next and to provide channel dimensions for the safe and efficient movement of maritime traffic.

To provide the Corps with sufficient flexibility, we would suggest the Chief of Engineers be authorized to reprogram funds appropriated for maintenance dredging without prior approval by the committee, provided the decrease in funding for this important program does not exceed 10 percent.

The precedent for such limitation can be found in the Energy Reorganization Act of 1974. Further, we support the Administration's proposed legislation which would increase the user fee imposed on applicable commercial cargo to cover up to a hundred percent, rather than the current 40 percent of harbor maintenance project costs out of funds appropriated from the Harbor Maintenance Trust Fund.

However, we would urge that the trust fund be excluded from the Section 302(b) Budget Committee allocation.

There is one other important recommendation we would make to the committee which is essential to protect the navigational infrastructure of our ports and waterways. The Corps should be reimbursed for unanticipated emergency dredging costs resulting from national disasters, to avoid depleting of funds appropriated by the committee for essential maintenance dredging projects.

One possibility is to fund the emergency dredging costs from the revolving fund and then replenish the funds by a supplemental appropriation.

Another option would be for the authorizing committee to amend the Flood Control Act of 1941 to include emergency dredging.

As an alternative, the committee may wish to consider establishing an emergency fund similar to that authorized for the Bureau of Reclamation to provide for emergency dredging for restoration of authorized project depths for Federal navigable channels and waterways made necessary by flood, drought, earthquake or other natural disasters.

Mrs. Boggs, I appreciate the opportunity to testify before you this afternoon. Thank you.

[The statement of Mr. Barlow follows:]

NATIONAL ASSOCIATION OF DREDGING CONTRACTORS

STATEMENT OF DEWITT D. BARLOW, III

ON THE

FISCAL YEAR 1991 CIVIL WORKS BUDGET

BEFORE THE

SUBCOMMITTEE ON ENERGY & WATER DEVELOPMENT

HOUSE COMMITTEE ON APPROPRIATIONS

APRIL 3, 1990

Proposed Actions by the Committee

- That the total funds appropriated for maintenance dredging be earmarked with the proviso that the Chief of Engineers shall have the authority to re-program such funds, without prior approval by the Committee, where the decrease in funding from re-programming does not exceed 10 per centum. This procedure will provide the Corps with sufficient flexibility, while ensuring that essential maintenance dredging projects are performed.

- That the Harbor Maintenance Trust Fund be excluded from the Section 302(b) Budget Committee allocation.

- That an "Emergency Fund" be established, similar to that authorized for the Bureau of Reclamation (43 U.S.C. 502), for emergency dredging for restoration of authorized project depths for Federal navigable channels and waterways made necessary by flood, drought, earthquake, or other natural disaster. The creation of a separate fund for emergency dredging will avoid depleting funds appropriated by the Committee for essential maintenance dredging projects.

Mr. Chairman, and members of the Subcommittee, my name is DeWitt D. Barlow, III. I am President of the National Association of Dredging Contractors. I am also President and Chief Executive Officer of Great Lakes Dredge & Dock Company, Oak Brook, Illinois. Accompanying me is our Association's counsel, Bob Losch.

We appreciate the opportunity to testify before the Committee today. As you know, we have not appeared before this distinguished Committee in the last few years. However, this year, we feel it is important to express our concerns over the current status of the Corps of Engineers' Maintenance Dredging Program.

The dollar amount of maintenance dredging work performed by the dredging industry during the 6-year period from FY 1984 through FY 1989 has steadily declined from $376 million to $227 million. This represents a dramatic 39 percent reduction in the funding applied to the navigation mission. We would also point out that whenever there are reductions in the Operation and Maintenance, General account, due to budgetary constraints, the Corps takes the cuts out of that portion of the maintenance dredging program that is to be performed by industry. As a result, a substantial number of Federal navigation projects are being deferred from one fiscal year to the next, ad infinitum. This is a "Rob-Peter-to-Pay-Paul" operation and is not consistent with the funding allocated by this Committee. The deferral of essential maintenance dredging projects threatens the preservation of our navigational infrastructure and results in costly delays to maritime traffic.

It is important to emphasize that it is the dredging industry that takes the brunt of the funding cuts made in the maintenance dredging program. The work assigned to the Corps' minimum fleet is not reduced, and the Corps continues to operate as usual without any cutback in the operational schedule for its dredges. To be equitable, the operational schedule of the Corps' minimum fleet should be reduced in view of budgetary constraints.

Not all of our concerns with the Corps' maintenance dredging program are attributable to budgetary constraints. In the last fiscal year, there were significant disruptions to the program due to other factors. At the outset of FY 1989, the Corps released $200 million to the Division Engineers without providing specific instructions as to how the funds were to be expended. Consequently, a significant part of these funds were allocated to unbudgeted projects not related to the maintenance dredging program or the navigation mission. As a result of the diversion of funds from the dredging program in FY 1989, there was a substantial shortfall of funding available for maintenance dredging to be performed by industry which caused a temporary suspension of advertisements.

The Corps, in FY 1989, budgeted $279 million for the maintenance dredging program to be performed by industry. The actual amount expended was only $227 million. As a result, 45 projects were cancelled in FY 1989 and re-scheduled for FY 1990. The estimated cost of these projects totalled approximately $25 million. The Corps was forced to cancel these projects primarily because of the lack of funds, notwithstanding the fact that industry's bids on jobs advertised in FY 1989 were $26 million, or 10% less than the Government's cost estimate without profit. These were very favorable bids, Mr. Chairman, because as you know, the Corps is authorized, under a legislative mandate, to award a contract when the industry bid is not more than 25 percent in excess of the Corps' cost estimate.

In addition, a substantial number of the budgeted dredging projects actually bid were delayed by slippage or postponement due to the problem caused by the funds being diverted from the program. The period of delay or postponement was extensive, ranging from one month to nine months. The maintenance dredging of the Black Warrior Lower Reach of the Tombigbee River is a good example of a delayed or postponed project. The advertisement for bids for this project was delayed by two months. As a result of the postponement, the shoaling caused interference and delays in the movement of barges on the waterway when the river stage receded.

We should point out that there is a difference between industry's and the Corps' data bases, which we estimate to be in the range of plus or minus five percent. This difference should be resolved in forthcoming meetings with the Corps and we will be pleased to provide the Committee with the final results on the program for FY 1989. Nevertheless, we believe the statistics we have cited provide a reasonable overview of the FY 1989 maintenance dredging program performed by industry.

Mr. Chairman, we also wish to make it clear that our comments are not intended in any way to be critical of the Corps of Engineers' Headquarters staff. The Corps, as we all know, has done an extraordinary job in management of the dredging program. We have nothing but the highest praise for the Corps' personnel. Our comments and recommendations are offered in a constructive way to enhance and strengthen the maintenance dredging program. We would point out that the Corps' Dredging Branch has been understaffed, and we understand that the Corps is having difficulty in attracting qualified personnel to Washington from their field offices because of the high cost of living in the Metropolitan Area. The major problem is that the hiring freeze imposed by the Secretary of Defense prohibits the Corps from filling existing vacancies.

We are pleased to point out that we have been informed that the Corps has implemented internal controls to ensure that there is no re-occurrence of the problems similar to those encountered in the maintenance dredging program in FY 1989. Nevertheless, we strongly urge the Committee to earmark, or clearly define, the total funds appropriated for maintenance dredging of channels and harbors to avoid the continued deferral of essential maintenance dredging projects from one year to the next, and to provide channel dimensions for the safe and efficient movement of the maritime traffic. The earmarking of the total maintenance dredging funding allocated by this Committee will provide flexibility to permit the Corps to shift funds, based upon a change in requirements, from one navigation project to another. To provide further flexibility, we would suggest that the Corps be required to submit a re-programming request to the Committee only when the maintenance dredging funds are to be reduced by more than 10 per centum. This should provide sufficient latitude. A precedent for such a limitation can be found in the Energy Reorganization Act of 1974 (42 U.S.C. 5821).

We support the Administration's proposed legislation which would increase the ad valorem user fee imposed on applicable commercial cargo to cover up to 100 percent, rather than the current 40 percent, of harbor maintenance project costs out of funds appropriated from the Harbor Maintenance Trust Fund. If this legislation is enacted, we would urge the Committee in its report to clearly earmark the funds appropriated for maintenance dredging from the Harbor Maintenance Trust Fund. We are also urging the authorizing Committees to include statutory language in the legislation to ensure that any surplus in the trust fund is not used as an offset to the national deficit. To accomplish this objective, we are proposing that the Harbor Maintenance Trust Fund be specifically excluded from the Section 302(b) Budget Committee allocation.

There is one other important recommendation we would make to the Committee to ensure that regularly scheduled maintenance of channels and harbors is performed, which is essential if we are to protect the navigational infrastructure of our ports and waterways. The Corps should be reimbursed for unanticipated emergency dredging costs resulting from natural disasters out of a separate fund to avoid depleting the funds appropriated by the Committee for essential maintenance dredging projects. One possibility is to fund the emergency dredging costs from the Revolving Fund and then replenish the fund by a supplemental appropriation. Another option would be for the authorizing Committee to amend the Flood Control Act of 1941, as amended (33 App. U.S.C. 701n), to include emergency dredging. As an alternative, the Committee may wish to consider establishing an "Emergency Fund", similar to that authorized for the Bureau of Reclamation (43 U.S.C. 502), to provide for emergency dredging for restoration of authorized project depths for Federal navigable channels and waterways made necessary by flood, drought, earthquake, or other natural disaster.

Mr. Chairman, I appreciate the opportunity to testify before you and the Subcommittee.

Mrs. BOGGS. Thank you very much, and I am glad to see our chairman has come in.

I would like to comment that I am very happy that you decided to come back to testify before us this year. As always, we find your testimony very helpful to us.

I especially appreciate your interest in the deepening of the channel from the mouth of the river to New Orleans, and then, of course, to Baton Rouge. And I know that the dredging industry has some good suggestions in those regards.

So I do thank you very much.

Mr. BARLOW. Thank you. It's not without your help that the industry is able to do that.

Thank you very much.

Mrs. BOGGS. Mr. Chairman?

Mr. BEVILL. [Presiding] Thank you very much.

I was about to say that Bob made the best speech I ever heard him make, but I found out he didn't speak.

Mr. Barlow, I am sorry I missed your remarks, but I certainly have access to them in the record.

And I am curious about how we are doing on the six harbor deepening projects in the country. Do you know offhand?

Mr. BARLOW. I don't know which six you speak of.

Mr. BEVILL. Mobile, Baltimore, Norfolk, California, New Orleans——

Mr. BARLOW. Much of that is complete. Mobile will be finished in May.

The portion that has been advertised and contracted in Norfolk is done. Baltimore will be finished late this summer. The Grays Harbor work in Washington is just getting underway.

Mr. BEVILL. The one in California?

Mr. BARLOW. There is one in Long Beach. That project will be done in late August, early September.

Mr. BEVILL. How deep are those going?

Mr. BARLOW. Forty-five feet is the prevailing depth.

Mr. BEVILL. Thank you very much.

Mr. LOSCH. Mr. Chairman, if I could just add, if I was giving the presentation, I can assure you it would have taken longer than five minutes.

I know he will do very well, but Mr. Chairman, Mrs. Boggs, we are just delighted you are here this afternoon, and we also appreciate your help.

Thank you both.

Mr. BEVILL. We think that the dredging work in this country is very important, especially when we look at the trade deficit and realize that we can cut down the cost per unit of transportation with deeper harbors.

Mr. LOSCH. It's very viable as far as our foreign trade deficits.

Mr. BEVILL. We will be working with you, Bob, and we will do the best we can.

Mr. LOSCH. Thank you, Mr. Chairman.

Mr. BEVILL. That is today's last witness. Congressmen Barnard, Eckart and Rangel have also requested to place statements in the record, which we will do, without objection, at this point.

[The statements of Hon. Doug Barnard, Jr., Hon. Dennis E. Eckart, and Hon. Charles B. Rangel follow:]

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April 3, 1990

The Honorable Tom Bevill
Chairman
Subcommittee on Energy and
Water Development Appropriations
2362 Rayburn House Office Building
Washington, D.C. 20515

Dear Tom:

Please accept the enclosed testimony on the Division of Energy Biosciences as part of the official record on the Energy and Water Development Appropriations hearings.

I am strongly supportive of a $25 million funding level for this worthy office and have outlined my reasons in the attached statement. I regret that my schedule did not allow me to present my remarks at the hearing for outside witnesses and appreciate your consideration of my comments at this time.

Thank you for your time and attention to my request. Please let me know whenever I may be of assistance to you.

Sincerely,

Doug Barnard, Jr.

DB/bb

Enclosure

STATEMENT OF CONGRESSMAN DOUG BARNARD, JR.

before the

ENERGY AND WATER APPROPRIATIONS SUBCOMMITTEE

on

DIVISION OF ENERGY BIOSCIENCES

Mr. Chairman and Members of the Committee, I appreciate your considering my testimony on behalf of an additional $5 million for the Division of Energy Biosciences.

As you all know, the Division of Energy Biosciences is a small section of the Department of Energy receiving about $20 million a year which is used to fund competitive grants for biological research. The basic research supported by the Division has yielded innovative results which has, in turn, led to new industrial products and offered solutions to some of the country's major problems.

Despite their successes, however, the funding level has not kept pace with demand. In 1989 the Division was only able to support 3% of the research grant applications it received, and its dollar amount is declining. I believe the tremendous benefits of basic research argue for a $25 million funding level for this Division.

Let me list some of their accomplishments.

As we in Congress are grappling with ways to address the problems of air pollution and global warming, we would do well to fund basic research which may give us surprising new solutions. For example, Energy Biosciences is working on a way to convert carbon monoxide, a toxic gas, into valuable industrial chemicals.

In addition, their research is providing fundamental information about how greenhouse gases are formed by microbes. Increasing our understanding will enable us to take rational approaches to alleviating this global problem.

Work funded by the Biosciences Division is also being used to develop a way to design microbes to degrade and detoxify oil which will be extremely useful in cleaning up oil spills. Other strides have been made in developing bacteria that can break down contaminating compounds, such as trichloroethanol, at DOE facilities and toxic waste sites.

Finally, bioscience research is being used in agricultural production to reduce high cost of nitrogen-based fertilizers. Certain bacteria can carry out the biological conversion of nitrogen using only the energy captured by plants from the sun. Work sponsored by the Division is already leading to improving this conversion in alfalfa which could render it self-fertilizing.

In closing Mr. Chairman, I would like to emphasize that the Division of Energy Biosciences supports important basic biological research where unexpected new solutions to many of our country's problems are likely to emerge.

Perhaps the most essential component of the Energy Bioscience program centers on its human resources. The grants are used to a great extent to pay stipends for graduate students and postdoctoral research fellows.

Many of the people being trained with funded from the Division of Energy Biosciences become expert in neglected fields crucial to the development of biotechnology in our country, such as carbohydrate science, anaerobic microbiology, and plant biochemistry. These scientists, in turn, are employed by chemical, pharmaceutical and biotechnology companies thereby enhancing U.S. competitiveness.

The benefits returned from the small amount of money invested in this Division are great indeed. I urge this committee to recognize this return on investment by increasing the Division of Energy Biosciences to $25 million for FY91.

Thank you for your time and attention to my comments.

DENNIS E. ECKART
11th DISTRICT, OHIO

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CONGRESS OF THE UNITED STATES
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STATEMENT OF THE HONORABLE DENNIS E. ECKART
SUBMITTED TO
THE SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
OF THE HOUSE APPROPRIATIONS COMMITTEE

APRIL 5, 1990

Mr. Chairman, Members of the Committee, I want to thank you for allowing me to submit testimony to you today as you prepare to formulate the Fiscal Year (FY) 1991 Energy and Water Appropriations bill. I would like to request continued funding for a project of importance to my district in Ohio.

For the past several years, you have been very helpful in providing $1,050,000 for the development of an Aluminum-Air battery system by the ELTECH Corporation, located in my district. This project is further along today because of your action over the years, and I am submitting this testimony to request further appropriations.

The Aluminum-Air battery system for electric vehicles is an important part of our nation's energy technology development. This battery is the only system presently under development that would be capable of powering an electric vehicle for more than 300 miles between charges. This mechanically rechargeable Aluminum-Air battery has the potential to provide the range, acceleration, and refuelability of today's automobile. The Department of Defense continues to show extensive interest in the Aluminum-Air Battery and has used this battery successfully in Unmanned Underwater Vehicles for the Office of Naval Technology.

ELTECH is in the third year of its contract with DOE to define engineering feasibility, and has reached a point where ELTECH believes the battery is ready to be installed in a vehicle. The overall program had been projected to take six years including the EV installation. ELTECH is running on schedule toward completion of this project.

Research on the Aluminum-Air battery began in 1979 at Lawrence Livermore National Laboratory. Since then Livermore, ELTECH Systems, Case Western Reserve, Akron and Oklahoma State Universities as well as other companies have contributed to the testing and development of critical components and processes of the battery to determine its economic and technical feasibility.

While this effort produced a firm technological base from which to work, much research remains to develop the Aluminum-Air battery into a full-scale operating prototype power source.

Future development of this project will require government financial cooperation with the private sector to maintain U.S. leadership in this technology. The United States is not the only country that believes that Aluminum-Air batteries have significant potential a power source. ALCAN International, a Canadian company and the world's largest aluminum company, recently displayed a prototype vehicle powered by Aluminum Air. It would be unfortunate if a foreign country perfected this technology first.

Over the past five years, millions of jobs have been lost becuase international trade markets are tilted against the United States. Our leadership in high technology research and development, however, has helped to keep America competitive in the international arena. Providing continued funding for the Aluminum-Air battery project will help our country maintain its leadership role.

It is my hope that the Subcommittee will keep these factors in mind as it considers the FY 1991 Energy and Water Development Appropriations bill.

For these reasons I respectfully request that your Subcommittee retain the funding for the Aluminum-Air battery system at its FY 1989 and FY 1990 levels of $1,050,000.

Thank you again for this opportunity to submit testimony.

CHARLES B. RANGEL
16TH CONGRESSIONAL DISTRICT
NEW YORK

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PLEASE RESPOND TO
OFFICE CHECKED

March 28, 1990

Honorable Tom Bevill
Chairman
Subcommittee on Energy and Water Development
Committee on Appropriations
United States House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

On behalf of the Mount Sinai Medical Center located in my district I am writing to seek yours and the Subcommittee's support for Phase II funding for the Center's Institute for Human Genomic Studies

Mount Sinai is a major institution in New York and plays an extremely vital role in providing research and health care to my district and to all of New York. In recent years, Mount Sinai has committed substantial resources to studying the specific health needs of the East Harlem community. The Institute for Human Genomic Studies is designed to develop long term solutions to chronic diseases for which East Harlem residents are greatly at risk.

The initial grant of $12 million approved by the Subcommittee and Congress enabled Mount Sinai to establish the Institute's infrastructure and commence research. With Phase II funding, Mount Sinai will come closer to completing the infrastructure and be able to move forward with its mission.

I am enclosing for submission in the record, pursuant to the Subcommittee rules, five copies of the statement of Dr. John Rowe, President of Mount Sinai Medical Center.

Sincerely,

CHARLES B. RANGEL
Member of Congress

CBR/jrs

THE INSTITUTE FOR HUMAN GENOMIC STUDIES
AT THE MOUNT SINAI MEDICAL CENTER

TESTIMONY BEFORE THE
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
OF THE HOUSE APPROPRIATIONS COMMITTEE
MARCH 27, 1990

Chairman Bevill and Members of the Subcommittee on Energy and Water Development, my name is Dr. John Rowe. I am the President of the Mount Sinai School of Medicine and the Mount Sinai Hospital in New York City.

I want to thank you all for giving me the opportunity to testify here today and to present Mount Sinai's proposal for Phase II federal funding of the Institute for Human Genomic Studies at Mount Sinai.

All of you are familiar with the genome project -- the ambitious effort to map and sequence the human genome. The Subcommittee's far sighted and vigorous support of this new program will some day unlock the mysteries of genetic diseases and enable the medical world to find ways to treat them.

As you know, the Mount Sinai Medical Center joined this effort through the establishment three years ago of the Institute for Human Genomic Studies. In FY87, the subcommittee's recommendation to provide $12.7M in support of the Institute was endorsed by the full Congress. Since that time, in close consultation with the Department of Energy (DOE), Mount Sinai has obligated those funds. Phase I of the project is now well underway and comprises seven interdisciplinary Scientific Functional Units which focus on human biology and inheritance at the molecular level. In addition, a comprehensive Women's Clinical Service Unit in a consolidated, renovated facility which will be directly linked to the human genetics component of the Institute will provide primary health care, social services and outreach to residents of the East Harlem community.

Over the last two years, through DOE funding, remarkable progress has been made in establishing the Institute's infrastructure. Construction of the Molecular Scientific Functional Unit, which focuses on molecular biology research with biomedical implications, is 95% finished. Within this unit, the DNA and Transgenic Cores are both operational for DNA synthesis and sequencing, and production of transgenic mice, respectively. The Computational Scientific Functional Unit provides state-of-the-art computing and molecular graphics through two core facilities which are also operational.

Construction of the Neurobiology Scientific Functional Unit -- the focal point for a broad range of studies of basic neurological processes -- is virtually complete and the unit is operational. The Imaging Scientific Functional Unit (Cellular Imaging Core) is almost fully renovated, and it is anticipated that the facility will be operational in mid-April. The first phase of the renovation for the Cell Biology Functional Unit will be completed this summer; in the meantime, research is continuing. Within the Human Genetics Scientific Functional Unit, equipment has been purchased for the establishment of hybrid cell panels, cloning and sequencing of genomic regions and a molecular diagnostics laboratory, and genetic studies currently are underway.

Mount Sinai is seeking $12M of DOE funding for Phase II to continue the construction, renovation and acquisition of equipment for the Units I have just described. I would mention at this time that our plans include a third Phase requiring substantially less funding to complete the infrastructure of this project. No further federal funding after Phase III will be required.

Before making some additional comments on the enormous promise of gene mapping in general and the Mount Sinai Institute specifically, I would like to clarify any misunderstanding that may be lingering from last year. From the beginning, it has always been the express intention of Mount Sinai to pursue further federal support beyond Phase I. Our original prospectus submitted to this Subcommittee stated specifically that our request was for Phase I funding. At that time we were unable to determine the specific amount for further requests and so, of course, no figures for further requests were included. Our request this year is not part of any new endeavor, but simply the follow-up to our earlier Phase I request.

As I mentioned earlier, with Phase II federal funding, Mount Sinai will come close to completing the Institute's infrastructure and be able to move forward with its mission. Mount Sinai is committing nearly $60M over a five year period to this project and we intend to continue support to at least the level of $13M a year thereafter.

As the President of the Mount Sinai Medical Center, I want you to know that this Institute is among our very top priorities. The work of the Institute will be focused on the genetic determinents of common diseases in the East Harlem community. As you know, East Harlem is a section of New York City where residents are besieged by the nation's most devastating health problems. Our project will focus on the genetic basis of chronic diseases such as hypertension, heart disease and diabetes and holds enormous promise for improving substantially the health profile of East Harlem and similar communities across the nation. Mount Sinai has drawn faculty and researchers from virtually every medical department and we have been in the process of recruiting additional talent for the Institute.

I would like to comment on this project in the context of the continuing pressure of large federal deficits. As members of the Appropriations Committee, all of you understand the enormous drain on scarce federal resources represented by health care. This project offers a unique opportunity for dramatic reductions in acute care costs in the long term. The knowledge we will gain from the new biology of genetics will revolutionize the diagnostic element in medicine. We will be able to diagnose diseases with far greater precision than today and far earlier than is now possible. The early diagnosis of susceptibility to diabetes or hypertension, for example, -- two diseases common in East Harlem -- will enable us to avoid the extraordinary burden of health expenditures in managing those diseases once they are manifested and to reduce the tremendous human costs as well.

Thank you for giving me the chance to update you on the progress at the Institute and to present our proposal for further funding. East Harlem and communities like it have for the most part watched our nation's progress in health care slip by. We believe that the Institute and the gene mapping effort in general hold real promise that these benefits may finally be shared by all.

Mr. **Bevill**. The committee will now stand adjourned until 9:30 in the morning.

Also, without objection, several other statements will be added to the record at this point.

[The information follows:]

Alabama Power Company
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Alabama Power
the southern electric system

March 28, 1990

The Honorable Tom Bevill, Chairman
Subcommittee on Energy and Water Development
Committee on Appropriations
House of Representatives
2302 Rayburn House Office Building
Independence & S. Capital Street, S.W.
Washington, D.C. 20515

Dear Chairman Bevill:

Enclosed is the written statement of Mr. Herbert M. Boyd, Director-Technology Management at Alabama Power Company, a subsidiary of the Southern Company, which supports the funding of $45.6 million for the Department of Energies Photovoltaic Research and Development Program for Fiscal Year 1991.

I respectfully request that Mr. Boyd's statement be included in the record of the Subcommittee hearing.

Sincerely yours,

David W. Wheeler

David W. Wheeler

DWW/mf

Enclosures

cc: Subcommittee Members

STATEMENT OF HERBERT M. BOYD

Submitted to the
Subcommittee on Energy and Water Development
of the
House Committee on Appropriations
April 2, 1990

Mr. Chairman, members of the Subcommittee, I am pleased to have this opportunity to present the views of the Alabama Power Company on the FY 1991 budget request for the Department of Energy's photovoltaic research and development programs.

I am Herbert M. Boyd, Director-Technology Management at Alabama Power Company, a subsidiary of The Southern Company.

First I want to thank the Chairman and members of the Subcommittee for supporting photovoltaic research and development programs during past years.

The Department of Energy's request for FY 1991 of $43.6 million for photovoltaic research and development is 8% larger than the FY 1990 appropriation. The Department of Energy should be commended for its recognition of the need for research associated with the photovoltaic technology. In my testimony in prior years, I have always identified the minimum funding level to keep a viable photovoltaic research program moving forward. The 1991 request is a step in the direction to recreate an atmosphere within the photovoltaic industry leading to new developments and new progress in both basic research and manufacturing development.

Alabama Power Company and the Southern Electric System continue to support research and development activities as it relates to photovoltaics. During 1989, we negotiated and are partners with the Solar Energy Research Institute (SERI) to install five economic applications of photovoltaics on Alabama Power's system. These projects will be installed and monitored in such a way that the experience and operating characteristics can be captured and transferred to other electric utilities. I want to stress that these are economic applications and not demonstrations of technical capability.

Installation 1 - Federal and State Environmental Protection Agency Regulations now require most buried steel (without fiberglass coating) tanks handling petroleum products to be cathodically protected. While most steel tanks are covered with bituminous coatings, resulting in small protective current requirements, the associated piping must also be protected. This piping is often uncoated galvanized steel. In addition, the soil resistivity affects the difficulty encountered in forcing the protective current to flow to the tanks and pipes; thus, impressed current cathodic protection systems are often preferred over sacrificial anodes, even though the total current requirement is relatively low.

Installation 1 will employ a standard impressed current cathodic protection system for a fuel storage tank, with the rectifier (the usual source of the dc protective current) replaced with a PV/battery system.

Installation 2 - Transmission line structures, especially those in marshy areas, are subject to corrosion and failure. This corrosion can be mitigated with the use of cathodic protection, either an impressed current or sacrificial anode system. The choice and size of cathodic protection system depends on several site-specific parameters and often an impressed current system is required, even though, as in the case of the storage tank discussed above, the protective current requirement is relatively small. The problem with an impressed current cathodic protection system for a transmission line structure, however, is the cost of providing usable service voltage for the rectifier. The cost of extending a distribution feeder to the site or stepping the transmission voltage down to 120 or 240 volts can be very expensive. The size of the PV and battery system required will depend on the site-specific parameters, but is expected to be approximately 100 watts of PV modules, with 50 amp-hr batteries operated at 24-48 volts.

Installation 3 - The Federal Aviation Administration (FAA) has regulations governing the aviation obstruction lighting of structures. The number and intensity of warning lights depend on the height and location of the structure and whether or not it is painted for daytime warning. It is often expensive and difficult to supply service level voltage to power the warning lights on a transmission line tower. In one such application in the Southern electric system, a portion of the overhead ground wire was converted to a distribution feeder to supply service voltage using conventional distribution transformers. This has resulted in numerous outages due to direct lightning strokes and subsequent failure of the transformers. Because of the terrain at this location, replacing the transformers is very expensive. A PV/battery system will be designed to provide the specific power requirements at three consecutive towers served by the converted overhead ground wire.

Installation 4 - Motor-operated disconnect switches controlled from district operation control centers are used to sectionalize transmission lines with taps to large customers. The switches are operated during line faults to clear the faulted line section while maintaining service to the tapped customer. The tap points are often in remote locations, resulting in expensive options to provide switching and communication system power. The infrequent use of these switches means that only a small amount of power is needed to operate the switches and communication system.

A remote motor-operated disconnect switch and a PV/battery system will be designed to satisfy this small power requirement.

Installation 5 - Lighting is often desirable, and often required for safety, at remote locations such as recreational areas, boat docks and launches and other areas frequented by people which are remote from other loads. Lighting is also needed in places that are not necessarily remote in distance, but remote due to the cost of installing service, such as providing power underground from one side of a paved street from a transformer vault or feeder to the opposite side of the street.

A PV/battery system will be designed to provide lighting for a remote lighting system.

In addition, during 1989 Alabama Power became a host utility for an EPRI project which also is trying to identify economic applications of photovoltaics on electric utility systems. The EPRI study is broader in that a more diverse set of applications are being identified. There are three specific EPRI Solar Power Program objectives to be accomplished with this effort:

(A) Identify cost-effective applications and opportunities for electric utilities where grid- and nongrid-connected photovoltaic systems could be utilized to provide electric service either for existing utility facilities and operations or for their customers.

(B) Document economic evaluation procedures used to determine cost-effectiveness and make quantitative, preliminary estimates of early opportunities for electric utility photovoltaic systems.

(C) Develop materials to assist interested utilities in examining their service territory for potential opportunities, initiating evaluation of candidate photovoltaic systems, and in understanding the requirements of installing photovoltaic systems in early, beneficial applications.

Alabama Power and the Southern Electric System will continue efforts to utilize the most economic resource in serving customers. If photovoltaics are to become beneficial to the electric utility, not only must research be done to lower the overall cost and improve the overall performance of photovoltaic arrays, but education as to the application and use of photovoltaic modules and arrays must take place.

Alabama Power and the Southern Electric System continue to support the use of funds for basic research; however, we must develop a market for the products currently being produced if the industry within the U.S. is to survive. While the U.S. manufacturers have made improvements in marketing efforts over the past few years, production capacity still exceeds demand. It is impossible for the photovoltaic industry to continue in its current form if this excess capacity condition exists for an extended period.

Therefore, I would urge that additional efforts, both monetary and administratively, be given to the development of markets and products within the U.S. which utilize photovoltaics as a basic power resource. I recommend a $2 million increase in the 1991 funding for the photovoltaic research and development program as follows:

ACTIVITY	Budget Request for 1991	Recommended for 1991
	(Dollars in Thousands)	
Advanced Thin Film Materials	15.5	15.5
High Efficiency Materials	7.3	7.3
Fundamental Materials Research	6.4	8.4
Collector Research	12.0	10.0
System Research	1.6	1.6
Capital Equipment	.8	.8
Market Development	0.0	2.0
TOTAL	43.6	45.6

If the United States is to stay competitive with other countries, then the funding levels identified above are a minimum for advancing the necessary photovoltaic technologies.

UNITED STATES HOUSE OF REPRESENTATIVES

101st Congress

Second Session

COMMITTEE ON APPROPRIATIONS

Subcommittee on Energy and Water Development

Statement for the Record

Inertial Confinement Program Status at the University of Rochester

by

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March 1990

Summary

The University of Rochester's Laboratory for Laser Energetics (LLE) has been involved in inertial confinement fusion (ICF) research since the late 1960s, and is the only ICF program jointly supported by the Federal government, State government, industry, utilities, and a university. LLE's work has made substantial scientific contributions to the National ICF program, at relatively small cost to the government, and transfers technology to the private sector through the training of graduate students and interaction with industry. The facility serves as a National laser users facility (NLUF), benefiting scientists throughout the country.

In the appropriations (HR2696) for Atomic Energy Defense Activities for FY90 (see the Congressional Record—House, September 7, 1989, page H5461) "The Conferees agree to defer, *without prejudice* initial funding of an upgrade to the Omega Laser of the University of Rochester. The conferees agree that improvements to major fusion facilities should be postponed until the results of the previously directed independent review of the Inertial Confinement Fusion program is completed."

That independent review has been conducted by the National Academy of Science (NAS) under the chairmanship of Prof. Steven Koonin of the California Institute of Technology. The Review of the Department of Energy's Inertial Confinement Fusion Program—Interim Report was published in January 1990. That report makes six principal recommendations, to be implemented in priority order. As part of the first recommendation, the report states:

> ***"Recommendation 1.2: We recommend that the OMEGA-upgrade laser be constructed, that the NIKE laser be completed on an accelerated schedule, and that funding for the LLE and NRL programs continue to ensure their vitality. The present OMEGA laser has met the milestones defined for it in the Happer report and has been almost fully utilized. Construction of the upgrade, as well as NIKE, is essential to retaining momentum in the direct-drive approach."***

The report also notes that the direct-drive approach to ICF may ultimately prove to be the best path. Under Budget Considerations the report also recommends that to implement the core physics program of Recommendation 1, that the OMEGA upgrade be funded. If the upgrade is not begun, Rochester may lose critical staff and students. The NAS committee correctly observed that the present OMEGA system is almost at the end of its scientifically productive life.

In addition to the strong NAS recommendation, DOE conducted a technical review of the OMEGA upgrade Title I (preliminary design) in November 1989. That review committee included scientists and engineers from InterScience, Inc.; Science Applications, Inc.; Los Alamos National Laboratory; Lawrence Livermore National Laboratory (LLNL); the Naval Research Laboratory; and McDonnell Douglas. Their report states: "The greatest strength of the OMEGA upgrade is the extensive use of proven technology. As a result, the technical risks appear to be relatively low for such a highly complex project. *The design will certainly lead to the most uniform high power solid state laser system available for direct drive experiment*" [emphasis added]. On October 26, 1989, DOE (Defense Programs, MA-22) conducted a cost validation review of the OMEGA upgrade design. The MA-22 FY91 recommendation: MA-22 validates this project at a TEC (Total Estimated Cost) of $47,000,000 and supports a FY91 BA of $16,100,000.

Requested Action

In order to implement the NAS recommendation, consistent with the DOE cost validation and MA-22 recommendation, authorization and appropriation for construction of the OMEGA upgrade requires $16,100,000 for FY91. Also, continued operations funding for the University of Rochester's Laboratory for Laser Energetics consistent with the President's Budget for FY91 requires $12,100,000 in operations and $620,000 in capital. The **requested action** is for total authorization/appropriations of $28,820,000.

Discussion

The near-term objective of the U.S. inertial fusion program is to demonstrate the feasibility of burning small masses of thermonuclear fuel in the laboratory by using lasers or particle beams. Understanding the physics of marginal fuel thermonuclear burn is vital to DOE's Defense Programs. ICF research and experiments contribute to the nuclear weapons program through increased understanding of thermonuclear burn and other weapons-related effects critical to the Nation's nuclear weapons design effort. The long-term objective of the program is to develop fusion as an inexhaustible source of electrical energy for the country.

LLE is the only major unclassified ICF facility in the U.S. The NAS Interim Report cites LLE for a number of accomplishments:

> *"There have been a number of significant accomplishments by the University of Rochester's Laboratory for Laser Energetics (LLE) since the Happer report. Among them are:*
>
> - *Development of smoothing by spectral dispersion (SSD), which reduced the overall root-mean-square inhomogeneity of illumination from 27 percent to 4.6 percent.*
> - *Improvement in the power balance of the 24 beams of OMEGA to 1 to 3 percent, routinely.*
> - *Implosions of cryogenic targets on the OMEGA laser to compressions of 100 to 200 times liquid hydrogen density.*
> - *Implosions of gas-filled capsules in good agreement with one-dimensional calculations over much of the implosion (up to convergence ratios of about 25).*
> - *Development of a variety of liquid crystal systems, including polarizers (incorporated into OMEGA beginning in 1986), apodizers, and polymer systems. Other outstanding technical achievements are an ion-assisted deposition technique for coatings, high-damage-threshold thin film linear polarizers, and a thermal conductivity technique for measuring thin films.*
> - *Development of a broad array of x-ray diagnostic capabilities.*
> - *Development of techniques for coating selected KMS microspheres with high-quality ablation and metal layers, as well as x-ray and interferometric techniques for characterizing capsules.*
> - *Design of the baseline configuration of an upgraded OMEGA system what will provide 30 KJ of blue light in 60 beams.*
>
> *This is an impressive list of solid accomplishments in a focussed program exploring direct-drive ICF. In addition, LLE has continued to be a valuable source of graduate students trained in ICF physics and laser technology. During the next five years, we expect that the LLE will continue this track record by:*
>
> - *Exploring and developing improved SSD as needed.*
> - *Pursuing further the understanding of the importance of bandwidth in judging the relative merits of various laser drivers.*
> - *Continuing OMEGA experiments to better understand the discrepancies between measurements and calculated one-dimensional performance.*
> - *Intensifying efforts to improve capsule fabrication capability, with special emphasis on using advances from the international ICF community.*
> - *Constructing the upgraded version of the OMEGA laser with a flexible configuration in anticipation of experiments that speak to varied and sometimes unexpected capsule physics issues. In particular, exploring the possibility of operation with green light and alternative smoothing schemes.*
> - *Initiating hydrodynamically equivalent and ignition scaling experiments on the upgraded OMEGA system."*

The production of clean and economically competitive electrical energy by the fusion process has been the ultimate objective of a worldwide scientific research effort for the last four decades. Fusion, the process by which the sun generates energy, involves the nuclear burning of low atomic weight elements to form heavier elements with the subsequent release of energy. With a limited world oil supply, and with present concerns about the use of fossil fuels — acid rain, the "greenhouse" effect, and the large quantities of water required in the coal mining process — the development of large-scale, safe alternative energy sources should be a high National priority. A National goal should be the development of fusion for use in the 21st century. For the first time after a quarter of a century of investment, we are on the threshold of proving the feasibility of inertial fusion!

There are two principal approaches to inertial confinement fusion: direct and indirect drive. In the indirect or "hohlraum" approach to fusion, the driver-beam energy is absorbed and converted to x rays by a case made of a high atomic weight element, the x rays are then used to drive the target implosion. In the direct-drive approach, a laser pulse directly illuminates a bare, spherical target. Since no intermediate conversion process is required for the direct-drive approach, it is significantly more energy efficient than the hohlraum approach.

In the late Seventies, efficient wavelength conversion techniques were developed and demonstrated at the LLE and elsewhere. The previous NAS report (Happer Committee, 1986) noted LLE began the *"investigation and demonstration of high efficiency frequency multiplication which now forms the basis of all the world's glass laser programs, and is certainly a major cause of the present upswing in ICF technical results and prospects."*

The development of the required ICF laboratory physics data base depends, to a large extent, on the target implosion experimental programs being carried out on the NOVA laser at LLNL and the OMEGA laser at Rochester. Progress to demonstrate the feasibility of ICF has been rapid since the problem of fast electron generation was overcome with short-wavelength lasers: Experiments on the NOVA laser at LLNL demonstrated densities in excess of 20 g/cm^3 (100 times the density of liquid deuterium-tritium fuel) by using indirect or radiation drive with an energy of 20,000 J and at LLE with the OMEGA laser using direct drive with 2,000 J of energy. OMEGA, a 4,000-J (1.054-μm) uniform illumination laser is the principal U.S. facility used to explore the feasibility of the direct-drive approach to ICF. The OMEGA upgrade (designed to produce 30,000 J at 0.35 μm) is designed to produce a thermonuclear plasma in the ignition regime for the first time in a laboratory. These results will provide the basis for a high-confidence decision to proceed with an LMF for the Nation.

While the current OMEGA experiments are important in addressing a number of key ICF issues, a higher-energy direct-drive capability, provided by an upgrade of this laser, is absolutely required to address ignition-scaling issues and many of the physics issues of reactor-size targets. *Such a demonstration will be possible on the upgrade of the OMEGA facility*. Continuity of program and continued scientific progress in direct drive requires that we initiate construction of the upgrade in FY91.

LLE will continue the development of measurement and design techniques for improving the quality of glass laser drivers and will investigate new and improved methods of producing optical components such as mirrors, polarizing elements, mechanical supports, phase plates, and other systems needed to operate large fusion-laser systems. LLNL and Rochester have agreed to cooperate and provide mutual support for their respective solid-state fusion laser research and development efforts. The OMEGA upgrade will serve as a test bed on which the relevant technology for a solid-state-laser National facility may be tested at modest cost to provide future direction for the National ICF program.

LLE operates the NLUF, which provides facility time for qualified researchers from other institutions who are approved for funding by DOE. The University provides student training and education at the M.S. and Ph.D. levels as part of the fusion effort, thereby providing the only significant source of trained manpower in an area of National need. The Rochester program is similar to the program at the University of Osaka in Japan. Osaka trains students and is pursuing ICF for energy. Currently, the University of Osaka is planning a 100 kJ upgrade to their GEKKO

XII facility. In terms of both National need and U.S. competitiveness, the next step at the University of Rochester — construction and use of the OMEGA upgrade — will continue to keep the U.S. current and competitive.

Funding and Management Issues

Table 1 shows the funding requirements for the period FY91–94 for the upgrade of the OMEGA laser and operations of the enhanced capability facility. The first row of the table is based on the President's Budget for the current program for FY91. The funding profile for the upgrade implementation and equipment costs is shown in the table. These are the cost figures validated by the Defense Program's validation team (MA-22); the initial estimated requirement for OMEGA construction and equipment is $47,000,000 in as-spent dollars as shown below. All of the current OMEGA hardware will be used in implementing this upgrade. Use of current OMEGA hardware considerably reduces the cost of construction of a 30,000-J direct-drive facility.

Table 1

Funding Profile for the OMEGA Upgrade

($ in Millions)

Program Element	Required Funding Profile			
	FY91	FY92	FY93	FY94
DOE/LLE—Current Program (operations)	12.1	12.7	13.3	14.0
DOE/LLE—Current Program (capital)	0.6	0.7	0.7	0.7
OMEGA Upgrade Construction	16.1	21.0	9.9	–
OMEGA Increased Operations	–	1.8	2.7	2.8
Total UR/LLE Funding	28.8	36.2	26.6	17.5

The engineering design effort for the OMEGA upgrade was completed in FY89 and merit-reviewed early in FY90. Full implementation of the OMEGA upgrade could begin in FY91 with completion by FY93. Ignition-scaling experiments and hydrodynamic stability experiments for targets that are hydrodynamically equivalent to high-gain, direct-drive designs could be conducted beginning in FY93.

March 22, 1990

Testimony for the Subcommittee on Energy, House of Representatives on the Superconducting Supercollider

Philip W. Anderson
Joseph Henry Professor of Physics
Dept. of Physics, Princeton University
Princeton, N.J. 08544

I am Philip W. Anderson, a theoretical physicist who has worked in many fields but especially in solid state and condensed matter physics. My bona fides include the Nobel Prize in Physics in 1977 and the National Medal of Science in 1982. I was employed for 35 years at the AT&T Bell laboratories, during which time I was also a part-time professor at Cambridge University for eight years and for ten years at Princeton. I am now at Princeton full time and in the forefront of the attempt to produce a theoretical explanation of High T_c superconductivity, a problem which has proved to be one of the most important, obscure, and fascinating in all of science.

I am not unfamiliar with the theories which the SSC is being built to investigate. As a matter of history, I was probably the first to understand the so-called "Higgs" mechanism, involving the elusive Higgs boson, which this machine may or may not discover, the search for which appears to be its primary motivating factor.

And so I feel I have a unique perspective on the question of whether it is important for the United States to spend eight billion dollars to confirm one of my theories while apparently not being willing to spend a few tens of millions to do basic research on another. This is very frustrating for a broad range of reasons: first, because superconductivity presents the deeper and more exciting challenge; secondly because it is not only relevant to other scientific subjects (magnetism, chemical bonding, and even elementary particle theory) but to other realms of human knowledge (medical instrumentation, both MRI and brain wave detection); and thirdly it is actually economically useful in an endless variety of ways which have been widely discussed in the press.

High T_c superconductivity is in every way more rewarding than a search for yet another subatomic particle which relates to not much but itself. Yet most workers in the field of the basic science of superconductivity in this country are experiencing repeated and severe funding cuts (funding cuts are very real to those of us who get them; Eric Bloch of the NSF has not been a reliable witness in this respect, in his recent testimony before the HSST committee. Dr. Bloch and Congress in concert have been adding responsibilities to the NSF agenda while not providing the corresponding funds, funds which are then sequestered from the basic science programs. Incidentally, the story in DOE has been much the same, at least for this field.) And we are only one of the many fields of basic scientific research which are being squeezed almost out of existence by cuts in funding.

The message my fellow scientists and I are trying desperately to get across to you is that despite the magnitude and glamor of the SSC it is of little genuine importance to basic research in this country, nor can the gigantic disparity in its cost relative to other fields be justified by the small role it will play in providing for the next generation of scientists.

Perhaps I can elucidate this question of cost by examining one aspect of scientific achievement: the awarding of the Nobel prize. This is not unreasonable in the sense that these awards, and those of other major prizes, give us a rough feeling for the rates at which really important, basic discoveries are being made in different fields. There is a certain rough equilibrium: few if any scientists would say that one prize-worthy achievement is obviously "bigger" than some other. And, in fact, I have heard it said that what one hopes to get from the SSC is a Nobel prize.

Historically, roughly one-third of physics Nobel prizes have been in elementary particle physics, and only a fraction of these for experiments—I reckon less than one prize per particle accelerator which your committee has funded. If one is forthcoming from the SSC, that will represent at least $10,000,000,000 per Nobel prize (after accounting for the cost of experimental facilities and operation.)

It is not hopelessly difficult to estimate the cost of at least some of the Nobel prizes in other branches of physics. The research budget for basic physics research at the AT&T Bell Laboratories has never been larger than one hundred million (present) dollars a year, and in 30 years (for $3 billion) that has produced, in addition to a lot of very important technology, four Nobel prizes (as many as nine awardees)—or less than 1/10 the aforementioned cash-cost per prize. If we were to add up all Federal funding for basic (as opposed to applied condensed matter research or atomic physics research, the numbers would be equally one-sided relative to the many Nobel prizes which have been awarded in these fields outside particle physics.. (Of the last five, three were in condensed matter, one in atomic physics, and one in particle physics.)

Looking over the whole spectrum of fields, it would seem that the government is supporting every elementary particle physicist with about ten times as many dollars as any other basic scientist, while the rate at which major prizes are awarded—which really does reflect pretty well the rate of significant scientific advances—is more nearly equal per scientist than per dollar, reflecting the fact that great ideas are usually individual, personal achievements.

One can even pretty much predict who is eligible for a Nobel prize by looking at the people who have won other major prizes, such as the MacArthurs and the Wolf prize in Israel. These other prizes are even less focussed on particle physics. And of the obvious candidates indicated by these awards I could name several who are very poorly funded in this country.

It is especially disturbing that of these major young leaders in physics I know several who are thinking seriously of leaving this country for more supportive scientific environments (as in Europe or Japan), where science funding is less bureaucratic and more liberal. Under our present policies—and for the first time in history—we see the beginnings of a reverse brain drain.

Extravagant support for a scientific monument such as the SSC [illegible] the wrong message to give to our science establishment. When, in a time of tight budgeting, we fund projects like the SSC and the space station, which support a small elite of our scientists and a set of industrial contractors, and hold the true basic science agencies such as the NSF and the NIH to fixed budgets and move their agendas from basic science, the message cannot be read as anything but that the Congress is indifferent to the health of science in the United States.

We must realize, however reluctantly, that the world begins to challenge our superiority in science and technology—not only Japan but the new Germany, a united Western Europe, and even the Soviet Union as it shakes off its bureaucratic lethargy. We must encourage and support our innovative scientists in a whole spectrum of the most challenging fields. Don't starve us out.

Statement for the Record

Submitted to the House Committee on Appropriations

Subcommittee on Energy and Water Development

Hearings on the Fiscal Year 1991 Budget
April 4, 1990

Mr. Chairman and Members of the Committee, thank you for permitting me this opportunity to submit my remarks for the record on these proceedings on the subject of the fiscal year 1991 budget. The purpose of my testimony is to urge this committee's support for the High Performance Computing Initiative, presently pending before the Senate and the House, and to request that appropriations be made this year to the Department of Energy to enable it to begin the initial phases of this very important program.

My name is James E. Rottsolk and I am President and CEO of Tera Computer Company located in Seattle, Washington. Tera, one of the rare start-up supercomputer companies, was founded in 1987. Our research is dedicated to the development of the next generation's supercomputer. Our first product will be capable of performing up to 300 gigaflops per second, more than 100 times faster than today's fastest computer. Our current research and development production schedule anticipates completion of a prototype machine by 1992 and delivery of our first Tera machine by 1993.

This production schedule is contingent on our ability to maintain federal financial support. In fact, the very success or failure of our company, as well as that of other companies in our field, depends upon continued government support for high-performance computing research and development activities. Private dollars to support research and development in this high technology field are not abundant and those that are available must be leveraged by federal dollars. Given the fact that the U.S. government is the market for the newest and fastest supercomputers, support of this fragile industry with federal research funds and commitments to early purchases of new systems is wholly justified.

Mr. Chairman, you are most likely aware of the High Performance Computer Initiative. This Initiative to support high speed computer development and to strengthen the roots of this industry against foreign competition, is a joint initiative by the Office of Science and Technology Policy and the Congress and is the culmination of ten years of multi-agency study. The National High Performance Computing Technology Act is currently pending before the Senate and the House. It is our every hope that this bill be passed and its various programs implemented before the end of this Congress.

The Federal High Performance Computing Program has the best potential to strengthen our national competitive position both directly in high speed computing and indirectly in the new research, product development and manufacturing that are made possible by these fast computers. The Plan is a comprehensive and interdisciplinary program for federal action that will involve the participation of the National Science Foundation, Department of Commerce (NIST, NOAA, and NTIA), NASA, Department of Defense, Department of Health and Human Services (NIH) and other federal agencies as appropriate. I will address the remainder of my remarks to the importance of supercomputing capabilities to the Department of Energy mission.

Research laboratories of the Department of Energy have relied upon high speed computers as basic research tools for years. Progress achieved in many fields would not have been possible without access to the newest and fastest supercomputer systems. The simulation of physical phenomena made possible by these systems has allowed us to design new generations of nuclear weapons without the need for many actual nuclear tests. The computing capabilities of these systems will help us to draw a map of the entire human genetic system. This extraordinary sequencing process will culminate in the prevention of many, if not all, of today's diseases and illnesses.

Research problems remain which require much more capable and faster supercomputing. Among the grand challenges requiring faster supercomputers are the genome project, the SSC accelerator, nuclear fusion, oil and gas discovery, weather prediction, cell biology, drug design and a variety of high energy physics and astronomy questions. For example, the enormous data which will be collected in new experiments with the SSC will not be capable of thorough analysis without the aid of high speed computing. Similarly, both the discovery of new oil and gas reserves and the efficient extraction of known reserves is enhanced dramatically by the use of supercomputing to analyze data and analyze reservoirs.

Without continued U.S. advances in high speed computing, few solutions to grand challenges will be found. Without these solutions, continued scientific (and, consequently, economic) advancement will be hindered. Without a strong domestic supercomputer industry, these projects will fail to meet their objectives, or will be dependent on foreign manufacturers to do so. Such a failure is not necessary if timely federal support of supercomputer research and development is available.

Mr. Chairman, I realize that legislation to authorize the National High Performance Computing Program is pending and is not yet law. However, I believe it is incumbent upon the leadership of this committee to waste no time and to move forward with the appropriation of monies for fiscal year 1991. The American supercomputer industry stands on fragile ground. We have already witnessed the closing of one supercomputer company and the schism of another. General purpose supercomputer manufacturers now consist of four companies: Cray Research Incorporated, Cray Computer Company, Supercomputer Systems, Incorporated, and Tera Computer Company. Time is short and the cost of a national failure in supercomputing is very high.

I hope that we can rely on your continued leadership in this field and on your continued dedication to maintaining the superiority of America's research capabilities. I thank you for your kind attention to my remarks and am happy to answer any questions you may have regarding this testimony or any other points that may be of interest to you and your committee.

AMERICAN PUBLIC POWER ASSOCIATION

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Statement
of the
AMERICAN PUBLIC POWER ASSOCIATION
Submitted to the
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
HOUSE COMMITTEE ON APPROPRIATIONS
on
FY 1991 ENERGY AND WATER APPROPRIATIONS

April 4, 1990

The American Public Power Association (APPA), the national service organization representing more than 1,750 local, publicly owned electric utilities, submits this statement to the Appropriations Subcommittee on Energy and Water Development concerning appropriations for FY 1991.

POWER MARKETING ADMINISTRATIONS

The Administration's FY91 budget proposes radical changes in the repayment practices of the federal power marketing administrations (PMAs) and selling the Alaska Power Administration (APA) and the Georgia-Alabama portion of the Southeastern Power Administration (SEPA). Over the past several years, this subcommittee repeatedly rejected Administration efforts to alter PMA repayment policies. It also was this subcommittee's leadership that resulted in the explicit prohibition against spending funds to study the sale of the Bonneville, Southeastern, Southwestern and Western Area Power Administrations (Section 208 of P.L. 99-349). APPA appreciates the subcommittee's historic position on these proposals and encourages the subcommittee to reject these unwise and anti-consumer initiatives again.

Repayment Practices

The Administration proposes the repayment of all outstanding PMA debt on a straight-line amortization schedule at a current market interest rate. (APA debt is not included in this proposal because the budget assumes that APA will be sold.) The budget assumes nearly $1 billion in new income in fiscal year 1991 from this proposal; however, as confirmed by the Congressional Budget Office baseline projections, it is not possible to generate this assumed revenue in the available time frame.

Several adverse consequences for consumers, national energy policy, national economic competitiveness, the U.S. Treasury, and local economic conditions would result if the repayment acceleration proposal were adopted. Those consequences include:

- dramatic wholesale rate increases for federal power customers of 32 percent for the Bonneville Power Administration (BPA), 54 percent for SEPA, 78 percent for the Southwestern Power Administration (SWPA), and 52 percent for the Western Area Power Administration (WAPA). WAPA's 52 percent hike is the melded impact; project specific rate increases could be as high as 211 percent.
- volatile fluctuations in federal power rates as the interest charge on outstanding PMA debt is recalculated yearly to meet the current market interest rate.
- loss of the flexibility built into current repayment policies to allow for varying hydrologic conditions.
- local inflation, regional economic losses, and reduced industrial competitiveness resulting from federal hydropower rate increases.
- decreased U.S. Treasury receipts resulting from lower federal power sales. In some areas, federal power enjoys only a slight price advantage over other energy sources. The rate increases triggered by the accelerated repayment proposal could push federal power prices above what the market will bear, forcing current customers to find other energy suppliers.

Five of the last six Administration budgets contained proposals to change PMA repayment practices. Congress consistently rejected these proposals, and APPA urges rejection of the repayment proposal in the FY91 budget as well.

Sale of APA & SEPA Assets

APPA also urges Congress to reject the Administration's proposal to sell APA and the Georgia-Alabama System, including any attempt to lift the prohibition in Section 208 of P.L. 99-349 on spending funds to study sale of the SEPA assets. APA is not covered by Section 208, and the proposed sale is progressing through the administrative process. APPA opposes both sales proposals because selling PMA assets will increase electric rates, disrupt local and regional economies, eliminate a dependable source of revenue to the U.S. Treasury without reducing the burden of the federal deficit, and threaten a dependable power supply.

BPA's Conservation Program

The budget's attempt to force BPA to expense rather than to capitalize a substantially larger portion of the cost of its conservation program should be rejected. BPA already expenses about 50 percent of its conservation spending; the FY91 budget proposal, by cutting back on BPA's borrowing authority, would increase the expensed percentage to 75-80 percent. Adoption of the proposal would force BPA either to cut back its projected conservation program or to raise rates to cover the cost of expensing these measures.

Conservation is one of the most important means of meeting present and future energy requirements and is consistent with reducing harmful emissions into the environment. Also, the Pacific Northwest Electric Power Planning and Conservation Act of 1980 requires BPA to consider conservation as its highest priority in meeting future power demands. The proposed budgetary treatment of BPA conservation investments conflicts with current ratemaking trends and will discourage these energy saving investments. BPA's borrowing authority under the FY91 budget should be restored.

U.S. ARMY CORPS OF ENGINEERS

Procedural requirements to curb the exercise of excessive discretionary authority by the Corps of Engineers are needed to ensure that federal water projects constructed by the Corps are operated within the parameters established by Congress.

As this subcommittee knows, when new federal water projects are proposed, specific purposes are authorized and costs are assigned to each purpose. In many instances, project uses which were not anticipated and not authorized by Congress when the projects were first considered have emerged. These unauthorized uses -- such as recreation and water supply -- often reflect growing social and economic values. Federal power customers are willing to accommodate the objectives of these new, unauthorized project interests, provided this is achieved under equitable terms and through an open and deliberative process. Unfortunately, this equitable approach to conflict resolution is being frustrated and undermined by the cavalier actions of the Corps of Engineers.

As this subcommittee is aware, without congressional authorization or review, the Corps arbitrarily added new categories of project beneficiaries and altered the operations of the Georgia-Alabama System projects to benefit these unauthorized uses to the detriment of beneficiaries of congressionally authorized purposes. Similarly, the Corps' response to severe drought conditions in the Missouri Basin has triggered demands for a basin-wide review of the Corps' operating standards.

In response to earlier concerns about the Corps' use of excessive discretionary authority, Section 5 of the Water Resources Development Act of 1988 was enacted to provide project beneficiaries with certain due process rights before the Corps takes significant actions. Unfortunately, the Corps has not lived up to the letter or spirit of this requirement.

APPA urges this subcommittee to admonish the Corps to make certain it is operating federal projects within the parameters established by Congress and according to the requirements of Section 5 of the 1988 Water Resources Development Act. It is not APPA's intent or desire to micro-manage the activities of the Corps. However, it is essential that the Corps' activities and discretionary authority remain within the boundaries set by Congress.

The 1988 Water Resources Development Act also instructed the Corps to study the need to modernize and upgrade existing federal hydro facilities. The Corps is to report to Congress this year pursuant to Section 42 of the 1988 Act. However, the Corps has never requested an appropriation to do the study, and Congress has not independently provided the necessary funding. Given the intensive work on clean air legislation by this Congress and given the environmental benefits of hydropower, a study on maximizing existing federal hydropower facilities is in order. APPA urges this subcommittee to include funding for the study in the FY91 energy and water appropriations bill.

NUCLEAR REGULATORY COMMISSION

The Nuclear Regulatory Commission (NRC) proposes to recover 100 percent of its FY91 budget request of $475 million through user fees. NRC presently recovers 45 percent of its budget from user fees -- amounting to approximately $1.18 million per nuclear plant. To recover 100 percent of its budget, NRC would have to increase user fees to approximately $3.7 million per plant.

While APPA supports NRC's assessing user fees for specific services rendered, the proposed plan bears no relationship to services provided to operators of nuclear plants. Certain benefits of NRC regulation -- such as public health and safety, environmental quality, national security, and certain administrative functions -- accrue to the public at large and should be funded through appropriations. Congress should reject the proposed user fee increase, which, if enacted, will fall directly and exclusively on electric ratepayers.

ELECTRIC AND MAGNETIC FIELDS

Funding for the Department of Energy's (DOE) research program on health effects of electric and magnetic fields (EMF) from electric transmission and distribution lines should be increased. The FY91 appropriations request for the program is only $2.5 million, down from the current $3 million budget. Yet, the DOE program is the major federal EMF research program underway. APPA believes a higher funding level than requested is needed to keep this important program on track.

Conflicting research results from EMF studies is strong evidence of the need for a well-funded research program. The medical and scientific communities, as well as the Office of Technology Assessment (OTA), the electric utility industry, and numerous policy makers have called for further research into whether EMF presents adverse health risks and, if so, what remedial measures are in order. The public concern about EMF also is increasing. Yet, despite the obvious need for additional research, DOE is asking for less money in FY91 than the current and historic appropriation levels.

The current DOE program focuses on human epidemiology, baboons, melatonin, stress, sleep patterns, fundamental membrane studies, and cell and tissue physiology. Additional funding means work can go forward on the effects of exposure levels at accumulated and intermittent doses, at different frequency ranges, and with temperature changes. In addition, research on the specific effects of EMF exposure on the growth of brain and skin tumors can be initiated.

APPA supports both federal and non-federal EMF research, but believes there should be a strong federal presence in the total research effort to assure the public of an unbiased scientific evaluation of EMF. This subcommittee has been particularly responsive to the need for EMF research, agreeing over the last two fiscal years to a $4 million funding level. APPA urges Congress to disregard DOE's appropriation request and fund the EMF research program at a sufficient level for the research that must be done.

RENEWABLE ENERGY

APPA applauds the Administration's interest in renewable energy research and development. The Administration's FY91 budget request for renewable energy is a significant increase compared to prior years' funding requests and sends a positive signal to industry and investors.

APPA also is pleased with the proposed reorganization of DOE's renewable energy programs and creation of the position of deputy assistant secretary for utility technologies. The reorganization plan should make the programs more responsive to end users and speed up transfer of R&D results. However, care must be taken to ensure that existing well-run programs, such as the Sandia National Labs Design Assistance Center and the Lawrence Berkley Labs window research program, are not harmed by the reorganization. The Sandia Center has provided valuable assistance to several APPA members with photovoltaic projects, and its unbiased advice and guidance are not available from the private sector.

APPA supports the Administration's new renewable energy initiatives, particularly the photovoltaic manufacturing, integrated resource planning, and hydroelectric impediments initiatives. Although many of the initiatives will provide important research, DOE also must address the "demonstration gap" that exists between R&D programs and deployment of cost-effective technologies suitable for utility use. A prime example is photovoltaics. The goal of the photovoltaic manufacturing initiative is production of competitive solar cells for utility use by the mid-1990s. DOE and the photovoltaic industry, however, cannot "dump" this technology on utilities in the mid-1990s and expect it to be embraced. Utility resource plans for that time period are being made now. Absent a major DOE push, unfamiliar and still costly technologies -- however promising -- will not be included.

Furthermore, utilities must gain operational experience through demonstration projects before accepting photovoltaics. However, at current prices of $8,000/kW, most utilities are not willing to fund demonstrations. DOE needs more cost-sharing programs with utilities to fund demonstration projects, such as the Austin (TX) Electric Department/3M/DOE 300 kW project and the utility industry/DOE Photovoltaics for Utility Scale Applications project. Until a method is found to lower the capital cost of utility renewable power plants, large scale utility use will continue to be delayed.

Congress must address the need for market-scale demonstrations essential to commercial acceptance. Congress recognized this need for clean coal technology (CCT) projects and established the CCT demonstration program at DOE. APPA requests that a similar program for renewables be established.

For FY 1990, APPA urges that funding levels be increased slightly from the Administration requests. APPA recommends $137.1 million for solar, $19.6 million for geothermal, $29.8 million for electric energy systems, and $13.5 million for energy storage. For the solar funding levels, APPA recommends $48 million for photovoltaics, $28 million for solar thermal, $28 million for biofuels, and $5 million for solar buildings.

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TESTIMONY OF

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To:

House of Representatives
Appropriations Committee
Subcommittee on Energy and Water Development

April 4, 1990

Institute for Physical Research and Technology

Mr. Chairman, my name is Howard R. Shanks and I serve as Director of the Microelectronic Research Center at Iowa State University. I would like to report to you on a major commitment to research and development of new thin film photovoltaic materials and the improvement of solar cells made by our staff in Ames, Iowa. Our Center provides the focal point for solar cell efforts by the University, industry, and government and is in a position to expand research and development efforts to improve the U.S. position in alternate energy sources.

Potential energy shortages, environmental problems such as acid rain, and global warming make it clear that we need to pursue alternate energy sources in the near future. To this end, Iowa State University has expanded its efforts in thin film semiconductors for application to photovoltaics. Both amorphous and microcrystalline materials are under investigation because these materials provide a major advantage in the fabrication of solar cells due to our ability to deposit them uniformly over large areas. It is clear that such ability is required if we are to make a significant impact on the energy production needs and requirements of the United States.

The Center at Iowa State University has been involved with thin film semiconductors since its establishment in the early 1980's. This program is an outgrowth of earlier work starting in the mid 70's in the Ames Laboratory of the Department of Energy. Continuing serious commitment to this project by the State of Iowa has resulted not only in the advancement of the research program but also in the construction of a 1 megawatt per year roll-to-roll pilot line. The capability to deposit device quality semiconductor materials on a continuous polyimide substrate opens up significant new application areas for terrestrial power generation and potentially for space applications where low mass devices are required.

This broadly based program with state-of-the-art facilities and research capabilities has resulted in the attraction of a number of outstanding researchers to the Center including five long-term experts from industry and academia who have played pioneering roles in the field of thin film semiconductors and photovoltaics.

They are Howard Shanks, Director of the Microelectronics Research Center at Iowa State University and formerly Senior Scientist at the Ames Laboratory; Frank Jeffrey, formerly of the 3M Company and the Solar Energy Research Institute in Golden, Colorado; Derrick Grimmer, formerly of the 3M

Company and the New Mexico Southeast Solar Energy Research Institute; Joseph Hanak from RCA David Sarnoff Research Center and Energy Conversion Devices; and Vikram Dalal, formerly of the Delaware Institute for Energy Conversion, Chronar Corporation, and Spire Corporation. In addition, there is a permanent staff highly experienced in various facets of the semiconductor technology and a number of graduate students being trained in photovoltaic device fabrication.

Today this program involves a large number of faculty, research scientists, engineers, and graduate students working on all aspects of the problem from theory through film growth, device fabrication and applications.

The Program at Iowa State University

Iowa State University's photovoltaic program is focused on understanding and improving thin film photovoltaic material and devices with the goal of advancement and transfer of this important technology to production in the private sector through direct interaction with industry. Training of graduate students in the field and participation by visiting scientist from industry are also significant factors in transfer of the technology

The major thrust of the program is the development of high efficiency thin film solar cells by techniques which can be scaled up for mass production. Emphasis is placed on the broad base of research and testing available at the university and on bringing it to bear on the problem of fabrication of solar cells in a manner consistent with large scale production.

Current research projects within the University's program range from the development of theoretical models that define the fundamental properties of semiconductor materials through the development of new large area deposition techniques and to the pilot line fabrication of photovoltaic arrays and their application. Typical projects include:

> Theoretical Modeling of Semiconductor Materials. This work involves computer generation of large models of amorphous crystalline semiconductors using molecular dynamic simulations. Such computer generated structural information opens up a variety of possibilities for the study of physical properties and relating them to the experimental values. This is a very significant part of any long range effort for success in large area, high efficiency solar cells.

Film Deposition and Materials Studies. This program targets the development of new and improved deposition techniques for the preparation of photovoltaic materials over the large areas required while at the same time maintaining the required quality and properties needed for the fabrication of solar cells. New deposition techniques which are capable of scale up for production use are under intense investigation.

Long-Term Structure and Stability of Photovoltaic Material. This effort, funded in part by the utility industry, is looking at the long-term stability of the material for extended field application. Members of the Center have been directly involved in the study and characterization of these properties for nearly fifteen years. This work coupled with extensive efforts on film deposition is now being used to improve and control microstructure and properties in photovoltaic film for solar cells.

Photovoltaic Device Research. While the fundamental configuration of the solar cell is well developed and understood, all of the parameters must be optimized to obtain the maximum efficiency in such devices. This includes the stacking of multiple cells in a tandem configuration, the development of optimum surface coatings and substrates, and the proper packaging in order to provide maximum efficiency device. Work at Iowa State includes development of tandem cell configurations and advanced packaging and encapsulation techniques.

Flexible Substrate Pilot Line. Construction is nearing completion on a roll-to-roll pilot line for fabrication of thin film silicon solar cells. This ambitious and important effort is unique in a University setting. When finished, the system will be capable of production of 1 megawatt of cells per year on a continuous 12" wide polyimide plastic substrate. This line provides the basis for manufacturability studies leading to information on yields, quality, and fabrication costs necessary to design and build a production facility. Manufacturability studies coupled directly with the research program provide the most efficient, cost effective way to improve U.S. efforts in the development of alternate energy sources.

Photovoltaic Application. Because of the ability of the Center to prepare photovoltaic materials on flexible rollable substrates, there are opportunities to expand the applications of these materials to a variety of terrestrial projects. These include remote vandal-proof stand-alone power sources for such things as cathodic protection of bridges and pipelines, environmental monitoring, and communication systems. The Center is working closely with several companies to look at unique applications and also with several utilities to look at the potential for applications for grid power in the near future. This aspect of the program provides an opportunity for innovative graduate students to carry through with their ideas.

The Future

This dynamic program at Iowa State University has been supported entirely by funding from the State of Iowa and private industry. Because of the dedication of many individuals and their concern for our future energy needs, the program is moving ahead.

Although the program at Iowa State has already demonstrated considerable success in the development of production techniques for solar cells, to have truly national and international impact Federal Government involvement in the program is needed. Strong ties with and support from the DOE must be developed which can help provide the long-term stability needed for the research and manufacturability programs to move ahead in a timely fashion.

Currently, both Japan and Germany are investing significantly greater support in photovoltaics. If the United States is to remain flexible and competitive in its long range energy options, a mechanism must be developed which provides expanding support to emerging research and development centers such as the one at Iowa State University. Such dynamic and innovative centers can provide focused programs which generate new technology that is rapidly and effectively transferred to industry through direct interaction and well trained graduate students. This will allow the United States to compete on a more even basis with systems such as that in Japan where industry and universities operate much more closely.

HOUSE APPROPRIATIONS COMMITTEE

SUBCOMMITTEE ON ENERGY & WATER DEVELOPMENT

Bruce W. Morrison
Vice President, Atlantic Region
Westinghouse Electric Corporation

March 28, 1990

Mr. Chairman, Members of the Committee.

We welcome the opportunity to specifically describe the Westinghouse approach to restoring the nuclear option in the U.S. through the development and deployment of the mid size (600 MWe) advanced light water reactor AP600. As called for, this approach and our request can be summarized as follows:

* Nationally, we will need significantly more power capability in this decade; 125 gigawatts is the most widely accepted estimate of the new power needed in the 1990s.

* The environmental benefits of nuclear power are now being recognized compared with coal and other generation alternatives.

* Westinghouse together with DOE and EPRI has completed the conceptual design of the AP600 and the certification program with NRC is underway. This is an advanced, simplified 600 MWe PWR with passive or natural safety systems.

* Detailed cost estimates shows a saving of up to $2 billion over the lifetime of an AP600 plant compared with coal and the AP600 could be deployed in significant numbers by the end of the decade.

* To achieve these goals and economic benefits, utilities, before ordering these plants, will need certainty in both cost and schedule. To provide this and to protect investors and ratepayers, Westinghouse is prepared to offer fixed price and firm completion dates provided the first-of-a-kind and modular engineering called for in this project is in place.

* We estimate the cost of this four year project at $200 million in 1989 dollars. Since there is no present market for nuclear plants and since the Westinghouse approach is key to restoring a major electric generation source in the U.S., we propose that federal funding be provided. We also propose subsequent repayment to the Federal Government on a royalty basis for the first AP600 plants to come on line as a result of this successful joint government/industry initiative.

AP600

Three questions need to be answered for America's energy future in the 1990s.

First, why does the country need nuclear power?

Second, what kind of reactor is best suited to meet that need?

Third, what are the next steps the DOE should take to assure the U.S. a secure energy source that is environmentally acceptable at a reasonable cost?

AMERICA NEEDS MORE POWER CAPACITY -- NOW

A strong economy, one able to welcome new members to the labor force and to produce world-class products at competitive prices, demands reliable and low cost electric power.

After a long period of excess capacity nationally, and despite continued adequate reserve margins in most Western states, the U.S. faces power shortages in the Northeast, Southeast and along the Atlantic Coast.

Nationally, we'll need significantly more new power capacity in this decade; 125 gigawatts is the most widely accepted estimate of new power needed in the 1990s.

SECURITY IN DIVERSITY

Where should we look for this new power? The answer is that we should look everywhere. We must seek energy security in energy diversity. We must increase our efforts to conserve energy, we must minimize our dependence on oil for electricity generation and we must continue with coal as our principal fuel for generating electricity, particularly with technologies that clean the coal before or during combustion.

NUCLEAR MEETS ENERGY TESTS

Nuclear power passes all the tests we should apply to a primary energy source.

It provides a fifth of our electricity and none of the greenhouse gases or acid rain emissions. Since 1973, it has replaced $114 billion worth of oil imports without harm to the public.

Nuclear power is and will continue to be essential to our energy security, essential to our economy, and essential to protecting our environment.

NEW REACTORS MUST PROVIDE CERTAINTY

What kind of reactor is best suited to meet our need for power?

The answer is the reactor that provides utilities certainty in costs and construction schedules. A reactor that is more than safe. It must satisfy the public's definition of safety.

The AP600 being developed under the combined leadership of the Department of Energy, the Electric Power Research Institute, and Westinghouse meets these criteria.

AP600 PROVEN COMPONENTS, ADVANCED DESIGN

The AP600 is an advanced, simplified 600-megawatt pressurized water reactor (PWR) with passive or natural safety systems. It is conservatively based on proven, licensed technology with a new emphasis on safety features that rely on natural forces.

The AP600 achieves the benefits of natural safety systems while it simultaneously retains maximum lineage to light water reactors operating in the U.S. and around the world.

The AP600 design incorporates 3,000 reactor-years of PWR operating experience worldwide; the major components and systems are the same as those in over 200 operating PWRs worldwide. The AP600 is configured in a simplified design to meet new criteria and pass both regulatory and public scrutiny.

Safety, simplicity and reliability dominate the design process for the AP600. For example, the plant will have roughly 50% less large pumps, valves, pipes, heat exchangers, ducting, cable and building volume than current reactors. Such simplification contributes to lower capital costs.

The AP600 has been designed for faster construction. The plant will be largely prefabricated -- using factory-built, factory-inspected modules. Our partner in this part of the design is Avondale Shipyards, the leader in modular construction.

Modules will be shipped to the plant site by rail, joined together into larger modules, and inserted into preconstructed areas of the plant. Fast modular construction of this type can make the AP600 ready for operation in three years.

NO AP600 PROTOTYPE NEEDED

Besides a simplified safety system that creates greater public confidence, the AP600 addresses utility concerns for low cost electricity. The AP600 is the optimized progression from the Westinghouse two loop, 600-megawatt PWR. Six of these plants in the U.S. consistently perform at a level that is 10 percent better than the national average. Simplification will further enhance plant inspection and maintenance.

Commercializing the AP600 will also be cost effective. Because the AP600 makes use of existing PWR technology, no prototype plant will be required. A prototype plant could take a decade to build and cost several billion dollars.

The Department of Energy strongly endorsed the AP600 last year when it awarded Westinghouse a $50 million contract to continue development of this technology through the design certification stage. We expect to receive design certification from the Nuclear Regulatory Commission in 1994.

THE NEXT STEP

The next milestone is to build an advanced reactor employing proven technology. We believe a "lead plant" will be required to clear the path.

To this end, Westinghouse and its industrial partners are proposing a "lead plant" program using the Westinghouse AP600 as the model plant for stepped-up development. Under this plan, the first AP600 plant would be in operation by 1999.

In the "lead plant" strategy, several key activities will be undertaken in parallel, rather than sequentially. These are:

- Site selection and certification, and
- Completion of first-of-a-kind lead plant engineering.

Certainty is needed in cost and schedule for utilities to consider ordering and building AP600 as the flagship of the next generation of nuclear plants. To achieve this objective, Westinghouse must be in a position to offer fixed price, turnkey or a share-the-risk approach with the utility.

The first-of-a-kind engineering plan has two objectives: to develop the modular engineering which represents a new cost effective approach to plant construction; to provide all the engineering data needed to be able to offer fixed price. This must be in place for Westinghouse to be able to make the commitment and also for plants to be on line by end of the decade.

The first-of-a-kind engineering has to be completed by the end of 1994. These costs will not be incurred on subsequent plants, rather the $200 million would be paid back to the government from the sale of the first few plants. In effect, the government would limit the market risk until the market was established. At that point, the $200 million would be repaid from the sale of the plants in the marketplace.

DOE's revitalization strategy includes sharing the cost of NRC certification of advanced light water reactor designs. To assure that America has adequate supplies of electrical power from non-polluting fuels, DOE should provide support to include AP600 first-of-a-kind engineering.

By conducting these activities in parallel with reactor design and certification, and with efforts to achieve the institutional improvements that are necessary, the "lead plant" approach would enable the first AP600 plant to come on line by the end of the decade.

To help make this plan a reality, Westinghouse is fully committed to innovative approaches and to working with all interested parties.

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April 4, 1990

The Honorable Thomas Bevill
Chairman
Subcommittee on Energy & Water Development
Committee on Appropriations
U.S. House of Representatives
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Washington, D.C. 20515

Re: NARUC Statement on FY 1991 Funding for the Department of Energy's Solar and Renewable Energy Programs

Dear Chairman Bevill:

The National Association of Regulatory Utility Commissioners (NARUC) respectfully requests that this statement be entered into the hearing record on the Administration's Fiscal Year 1991 Budget Request for the Department of Energy's Solar and Renewable Energy Programs.

As the Association representing the State Commissions responsible for the economic regulation of our nation's electric and gas utilities, we have a vital and direct interest in seeing that the most efficient and environmentally safe technologies are used in meeting the energy needs of utility ratepayers. With this objective in mind, the Executive Committee of the Association adopted a resolution at its Winter Meeting in February that requests the Congress to increase funds for the research and development and the commercialization of renewable energy technologies. A copy of this resolution is attached.

Our resolution also calls for increased funds for the Department's energy efficiency programs. We believe that both energy efficiency and renewable energy must be given a high priority at DOE if we are to achieve our environmental goals and have adequate electricity supplies as a Nation.

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*Member of the Executive Committee of the Association.

We make our recommendations to you with a full understanding of the enormous Federal budget deficit pressures that face the Congress. What we seek is a balanced approach to our energy supplies by allowing renewable energy to compete with other forms of electric supply. We note that in recent years the Federal government has made significant cuts in the R&D budget for renewable energy technologies. We believe the time to change this policy has arrived, as the Nation is about to embark on a more diligent program to clean up its air and as the need for cost-effective electricity technologies becomes increasingly apparent.

The Administration in its FY 1991 request for these programs has taken a positive first step in asking for an increase in funds for several solar and renewable energy programs over the current appropriations. But we urge your Subcommittee to go one step further, and set the appropriations for all these program above what the Administration has requested.

Finally, we urge you to carefully consider the recommendations of the **Alternative Budget Coalition** on renewable energy programs. As a member of the coalition, we fully endorse these recommendations.

We appreciate your consideration of our statement regarding the FY 1991 Budget for Solar and Renewable Energy programs, and we like to thank the Subcommittee for allowing the NARUC to present its views on this timely subject.

Sincerely yours,

Paul Rodgers
General Counsel

Thomas Choman
Assistant Director
Congressional Relations

Resolution in Support of Federal Research on Energy Conservation and Renewable Energy Technologies

WHEREAS, *The Nation's growing dependence on imported oil supplies threatens our future well being and security; and*

WHEREAS, *The ability of the Nation to adjust to future energy supply constraints will depend on improvements in energy efficiency and the development of renewable energy technologies; and*

WHEREAS, *Renewable energy technologies and energy efficiency improvements are often highly cost effective and are essential to the achievement of environmental goals including a reduction in acid rain, the "Greenhouse effect" and damage to trees, crops and public health; and*

WHEREAS, *A vigorous research program on energy efficiency and renewable energy technologies must be given a high priority now if the Nation is to have the new technologies and products needed when energy supplies become increasingly constrained; and*

WHEREAS, *Federal funding for research and development on energy efficiency and renewable energy technologies has been cut by more than 70 percent since 1980; now, therefore, be it*

RESOLVED, *That the Executive Committee of the National Association of Regulatory Utility Commissioners (NARUC), assembled at its Winter Meeting in Washington, D.C., requests Congress and the Department of Energy to increase the funding for research and development and commercialization of energy conservation and renewable energy technologies, so that a balance will be achieved in our Nation's energy programs.*

Sponsored by the Committee on Energy Conservation
Adopted February 28, 1990

WEDNESDAY, APRIL 4, 1990.

CALIFORNIA PROJECTS

WITNESSES

HON. DON EDWARDS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

HON. DANA ROHRABACHER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

HON. ALFRED A. McCANDLESS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

HON. NORMAN D. SHUMWAY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

HON. JERRY LEWIS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

HON. NORMAN Y. MINETA, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

HON. WILLIAM E. DANNEMEYER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

HON. BILL LOWERY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

HON. MEL LEVINE, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

HON. ROBERT K. DORNAN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

HON. GEORGE E. BROWN, JR., A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

HON. RICHARD H. LEHMAN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

HON. C. CHRISTOPHER COX, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

HON. ROBERT J. LAGOMARSINO, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

HON. HOWARD L. BERMAN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

HON. RON PACKARD, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

HON. ANTHONY C. BEILENSON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

HON. CHARLES PASHAYAN, JR., A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

HON. NANCY PELOSI, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

HON. WALLY HERGER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

HON. GLENN M. ANDERSON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

HON. GEORGE MILLER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

HON. WILLIAM M. THOMAS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. **Bevill**. The committee will come to order.

We are pleased to have the distinguished and most effective and largest congressional delegation in the Congress here this morning, and especially pleased to have your good constituents here from California.

We appreciate your traveling 6000 miles to express your interest in these projects. That is always impressive.

I am going to ask our friend and very outstanding leader, Congressman Vic Fazio, if he will, to introduce each Member and just proceed.

Mr. **Fazio**. Thank you very much, Mr. Chairman.

I want to particularly, on behalf of our State Delegation, thank you and Mr. Myers and Mrs. Boggs, because she is such an active Member of this committee, for all the assistance that California has received from this committee over the many years that Californians have been coming back here presenting their requests to the committee.

All three of you are frequently in California. You know our problems and you have been very helpful.

All of us appreciate you.

I just want to say a few things about the situation we face.

As most of you know, we are not very far along in the budget process at this point. Yet our subcommittee is receiving requests from people in every corner of the nation.

I think it is pretty clear we are going to have a very difficult year in coming up with the funds that we need to add to the President's budget. If our subcommittee just gets the baseline budget, which is 1990 fiscal year funding level plus inflation, we will be one billion dollars short in outlays of continuing the programs we had in our bill in 1990.

In terms of appropriations, that doesn't mean funding in the year in which the appropriations occurred. That could translate into a shortfall between 1.5 and 2 billion dollars.

The Corps construction, some of you may know, spends out about 44 percent a year. O&M for the Corps, about 80 percent in the first year.

So, obviously we are going to need much of that money in outlays if we are going to be able to met the Gramm-Rudman targets that the full committee will pass on to us.

I am very concerned then that, in outlays, we are simply going to be at least a $1 billion short of what I think most people expect us to be able to provide, particularly for those Members who, like many, have come in this morning and believe we need to do a little bit more in certain areas.

On top of all the concerns about our 302(b) allocation from the full committee, which is really the result of the budget resolution, I think it is important to point out that the Administration has, in effect, sent us a budget that is really $150 million short of being able to just maintain the programs they have asked us to fund because, in fact, there are a number of items included in the budget that have not been enacted into law and which are not likely to be enacted. So we are really $150 million short of what the Administration is asking us to do.

So with all that backdrop, I hope my colleagues will appreciate the dilemma that we face. We are going to start with members of the delegation. The California Water Commission is scheduled to come up in 55 minutes, if not sooner, and the California Maritime Affairs and Navigation Conference at 11:30.

I will try to go in order of appearance. The first person I will call on is the Dean of the Delegation Don Edwards, who has another hearing to chair himself. We know your time is short.

Mr. **Edwards**. Thank you very much, and, Acting Chairman Fazio, thank you for many years of cooperation. I will briefly introduce representatives from San Jose, California, who will be testifying before the subcommittee later today.

First, I would like to introduce Mr. Joe Judge, who is the Director-at-Large of the Santa Clara Valley Water District. Mr. Judge will be presenting testimony today in support of flood control projects for the Guadalupe River, Coyote and Berryessa Creeks, the Upper Guadalupe River and the Pajaro River.

I would also like to introduce Mr. Albert Henley, General Counsel for the Santa Clara Valley Water District, who will be presenting testimony regarding the San Felipe Division of the Central Valley Project.

I might mention that Mr. Henley will be retiring this spring. All of us will miss his expertise and commitment to the needs of our community.

Also attending today's hearing on behalf of the Santa Clara Valley Water District are Mr. Ron Esau, General Manager of the Water District, Mr. James Lenihan, Director of Water District No. 5, and Mr. Stan Williams, Assistant General Manager for Floor Control.

As these representatives will explain, the Guadalupe River Project and the Coyote and Berryessa Creeks Project are of particular importance to the South San Francisco Bay area.

Currently, the City of Alviso, California, is protected from flooding by what is known as a "ring levee" which surrounds the city. It has been found that this levee contains asbestos, and the Environmental Protection Agency (EPA) has set a 1994 deadline for the removal of the levee. However, the removal of the "ring levee" prior to the completion of both the Guadalupe River and Coyote and Berryessa Creeks flood control projects would leave the City of Alviso subject to severe flooding.

In light of the EPA's deadline for the removal of the Alviso ring levee, it is vitally important that both the Guadalupe River Project and the Coyote and Berryessa Creeks Project be completed without delay.

Fiscal year 1991 funding is absolutely crucial to ensure completion of these projects in a timely manner. We would like to request that a fiscal year 1991 appropriation of $9 million in fiscal year 1991 funding be made available to continue construction on the Guadalupe River Project. We also strongly support the allocation of $424,000 to continue the preconstruction engineering and design phase for the Coyote and Berryessa Creeks Project.

The Upper Guadalupe River Project is another project which is critical to flood control planning in the South San Francisco Bay area. We support the Administration's request for $300,000 for the continuation of the Feasibility Study for the Upper Guadalupe River.

We would also like to request $2 million in fiscal year 1991 funding to reimburse the Santa Clara Valley Water District for excess expenses incurred during the final construction phase of the Pajaro River Project which was completed in July 1989. The President's budget also supports this funding level.

Finally, as Mr. Henley will mention later, we support the President's budget request for $1,715,000 for completion costs on the Bureau of Reclamation's San Felipe Division of the Central Valley Project.

The subcommittee's past assistance with flood control projects in the South San Francisco Bay area has been greatly appreciated. I look forward to working closely with you to provide the appropriations needed to bring these vitally important flood control projects to completion.

Thank you very much for receiving me today.

[The statement of Hon. Don Edwards follows:]

April 4, 1990
Congressman Don Edwards
Statement before the House Appropriations Committee
Subcommittee on Energy and Water Development

I'm pleased to be here to introduce representatives from San Jose, California, who will be testifying before the Subcommittee later today. First, I'd like to introduce Mr. Joe Judge, who is the Director-at-Large of the Santa Clara Valley Water District. Mr. Judge will be presenting testimony today in support of flood control projects for the Guadalupe River, Coyote and Berryessa Creeks, the Upper Guadalupe River and the Pajaro River. I'd also like to introduce Mr. Albert Henley, General Counsel for the Santa Clara Valley Water District, who will be presenting testimony regarding the San Felipe Division of the Central Valley Project. I might mention that Mr. Henley will be retiring this Spring. All of us will miss his expertise and commitment to the needs of our community.

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✓ Currently, the City of Alviso, California is protected from flooding by what is known as a "ring levee" which surrounds the city. It has been found that this levee contains asbestos, and the Environmental Protection Agency (EPA) has set a 1994 deadline for the removal of the levee. However, the removal of the "ring levee" prior to the completion of both the Guadalupe River and Coyote and Berryessa Creeks flood control projects would leave the City of Alviso subject to severe flooding.

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Mr. Fazio. At this time I will go to one of our earlier arrivals, Dana Rohrabacher.

Mr. Rohrabacher. Mr. Chairman, I thank you for this opportunity to testify today. The Corps of Engineers has described the Santa Ana River as the most dangerous flood threat west of the Mississippi.

Last year, this committee recognized the serious danger that the impending flood imposes on the residents of Orange County, California, and acted. By providing the necessary funding to begin construction on the Santa Ana Mainstem Project, this committee has taken the first step in saving perhaps thousands of lives and preventing an economic catastrophe that would be felt far beyond Southern California.

I appreciate the support that the Chairman and the committee has provided and I join with my Orange County colleagues, Mr. Dannemeyer, Mr. Dornan, Mr. Packard and Mr. Cox, in asking you for your continued support.

Mr. Chairman, it is not every Member of Congress that has the distinction of having the largest urban landslide in his district. The Rancho Palos Verdes landslide has destroyed over 170 homes. After spending over $7 million non-Federal dollars, the City of Rancho Palos Verdes has established the upper reaches of the slide.

Last year, I had the opportunity to strap on an oxygen tank and scuba dive to take a first-hand look at one of my constituent's most intractable problems. What I saw was startling. The underwater environment was badly damaged and, in fact, the slide had muddied the waters to such an extent that I could barely see my hand before my face.

What is clear, however, was that this landslide was damaging the underwater ocean habitat and the environmental stability of the region.

I am hopeful that the Corps can begin a Feasibility Study without delay, looking to determine what kind of structure may permanently stop the slide. Mr. Chairman, $500,000 is needed in fiscal year 1991 for investigations.

In addition, Mr. Chairman, I value the support the committee has given the Los Angeles/Long Beach Port Project where the largest port development project of the Nation is nearing completion of its Feasibility Study. These two ports deliver the most Customs revenue to the Treasury of any Customs district in the country.

Any appropriation will be cost effective because it will generate many times more Federal revenue than it costs. In fact, the 20-20 Port Expansion Project is one of the best deals the Federal Government has ever had.

I thank the committee for support of these three projects in the past and in the future.

Thank you, Mr. Chairman.

[The statement of Hon. Dana Rohrbacher follows:]

THE HONORABLE DANA ROHRABACHER

April 4, 1990

Statement before the House
Appropriations Subcommittee on
Energy and Water Development

Mr. Chairman and the distinguished Members of this Committee, I thank you for the opportunity to testify today.

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I thank the Committee for support of these three projects in the past and in the future. Thank you, Mr. Chairman.

Mr. Fazio. Thank you, Dana.

At this point we will go to our friend from the southernmost part of our state, Al McCandless.

Mr. McCandless. Thank you, Mr. Chairman. I appreciate the committee's courtesies in the past and the way they have handled our projects in Southern California.

For times' sake, I will save the details of Riverside County's projects for my written statement. At this time I would like to mention a few projects of particular interest and introduce you to some people from California's 37th District.

Ken Edwards is the Chief Engineer for the Riverside County Flood Control and Water Conservation District. He is here to speak in favor of the Santa Ana Mainstem Flood Control Project and the proposed Whitewater River Basin Flood Control Study.

Mr. Edwards will be available to answer any technical questions you might have on the Mainstem or Whitewater River. He will also update you on the planned Lake Elsinore Small Flood Control Project scheduled to receive funding under the Bureau of Reclamation's Continuing Authority Program.

I would also like to present Andrew Schlange, General Manager of Eastern Municipal Water District. Mr. Schlange will discuss Eastern Municipal Water District's proposed Reclamation Project. This project would restore, through tertiary treatment, groundwater for needed irrigation purposes.

With him is Larry Libeu, Director of Administrative Services for the Water District. Both of these gentlemen would like to brief you on this loan request.

One additional delegation you will be hearing from today is led by Chuck Bryant, Vice President of the Elsinore Valley Municipal Water District. He will be filling you in on the Temescal Valley Project loan request.

Also here on behalf of this proposed project is James Laughlin, General Manager of Elsinore Valley Municipal Water District.

Mr. Chairman, that concludes my oral testimony, and I ask permission to insert the rest of my statement in the record.

[The statement of Hon. Al McCandless follows:]

TESTIMONY OF THE HONORABLE AL McCANDLESS
BEFORE THE SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
COMMITTEE ON APPROPRIATIONS

April 4, 1990

Mr. Chairman, thank you for giving me the chance to be here today. I appreciate the committee's courtesy in allowing me to testify again on behalf of Southern California's water needs. I would like to update you briefly on the ongoing projects in my district with which you are already familiar, and then focus your attention on two areas of particular concern.

SANTA ANA MAINSTEM-

Planning and preparation for the Mainstem project is progressing rapidly. Construction on the Seven Oaks Dam is scheduled to begin this month. With appropriation of the $65 million recommended in the Corps of Engineers' FY 1991 budget, acquisition of lands, easements and rights of way will continue along with other elements of the project. These monies will facilitate completion of remaining construction contracts such as those to raise Prado Dam and modify existing channels and levees. The local sponsors are excited to get this project underway, having just signed their Local Cooperation Agreement (LCA) with the Army in December 1989.

SANTA ANA RIVER AND ORANGE COUNTY-

The Santa Ana River and Orange County is an important project dedicated to studying the flood control, water supply, and related recreation problems in the Santa Ana River Basin. These investigations are conducted independently of the Santa Ana Mainstem project. Implementation of this program will protect communities in the basin, which are comprised of more than 4 million people, from critical flooding problems around local streams. We ask for your support for the Corp of Engineer's request of $270,000 toward these efforts.

LAKE ELSINORE-

Lake Elsinore is located in Riverside County, about 70 miles southeast of Los Angeles. The residents of Elsinore Valley suffer harsh conditions caused by reoccurring fluctuation of the lake level. During periods of heavy rain, flooding of the lake causes major damage and loss of homes. In times of severe drought, however, the lake is reduced to dangerously low levels which affects water quality and seriously restricts the availability of water needed for irrigation and recreational uses. The Corps has developed a plan to handle the flooding aspects, while the U.S. Bureau of Reclamation is devising a lake management plan to offset the other problems of Lake Elsinore. The Corps is proceeding with the Lake Elsinore project under Section 205 as a Small Flood Control Project. I would ask for your support for sufficient funding of the Continuing Authority program, through which the Lake Elsinore project is supported.

WHITEWATER RIVER BASIN-

As the Whitewater River flows from the base of the San Bernardino Mountains, it is normally very quiet and usually fades away to nothing long before entering it's destination -- the Salton Sea. At other times, however, it becomes a roaring torrent, threatening the 200,000 people in the Coachella Valley and more than $10 billion in developed property located along its 50-mile long flood plain.

The area water districts, flood control officials and the U.S. Army Corps of Engineers have battled the Whitewater River for years as they have attempted to minimize the effects of the river's flooding banks. The Coachella Valley Water District has worked to channelize the river and although these earthen banked channels can safeguard against minor flash-flooding, they are expensive to repair and provide little protection against a major flood. The desert communities along the river have had six major floods since 1965, causing serious loss of property each time. The last major flood, in 1979, caused $31.5 million in damages.

Now, providing erosion proofing along the banks of the Whitewater river in the form of channel improvements, levees and an outlet to the Salton Sea, appears to be a feasible solution to minimizing flood damage, but further study is needed.

A study of the Whitewater River Basin was authorized last year by the Committee on Public Works and Transportation. Both the Coachella Valley Water District and the Riverside County Flood Control District fully support the study. Mr. Chairman, I think you can see that these flood protection measures are vitally needed to protect against a major flood event and I respectfully request your approval of $340,000 for a one-year reconnaissance study which the Corps of Engineers has recommended.

EASTERN MUNICIPAL WATER DISTRICT-WATER RECLAMATION PROJECT-

One final item that I would like to bring to your attention, Mr. Chairman, is a unique opportunity to reclaim precious water in Riverside County. The enlargement of the water reclamation facilities, proposed by the Eastern Municipal Water District, would greatly decrease the use within the Water District of our limited imported domestic water supplies. Additionally, such an expansion of facilities would permit continuous irrigation with provisions to expand irrigation capabilities to lands which are presently being dry farmed. The proposed project will also convey untreated and reclaimed water as groundwater recharge for the San Jacinto River Basin, aiding in the replenishment of the underlying groundwater basin. This groundwater will, in turn, serve both domestic and irrigation water to various users within the District.

Authorization for this project is already in place. I respectfully request your timely consideration of an appropriation request of $2,000,000 to begin this project.

TEMESCAL VALLEY PROJECT-

Finally, Mr. Chairman, I would like to express my support for one additional loan application. This request comes before you from the Elsinore Valley Municipal Water District for construction of their Temescal Valley project. This project would supply much needed water to the Temescal Valley for agricultural uses.

Mr. Chairman, your committee has been very supportive of Southern California water needs in the past. I thank you for this favorable attention and ask you to once again consider the importance of these projects by providing the funding requested at this time.

Mr. FAZIO. Thank you. Everybody's statement will be included in the record.

Now, Norm Shumway, my neighbor to the east.

Mr. SHUMWAY. I am pleased to be here this morning.

During all the years I have had the opportunity of testifying before you, this is the first year I preceded Glenn Anderson. I don't know how he got here so late.

Mr. ANDERSON. You couldn't get a seat up there.

Mr. SHUMWAY. I will be joined later by representatives from the Port of Stockton, including Alexander Krygsman, Port Director, and two commissioners, Phil Wallace and Oscar "Bud" Kleinfeld. From San Joaquin County, David Rowlands, City Administrator, and Doug Wilhoit, County Supervisor, are here.

Mr. Chairman, all of us in California have been the recipients of progressive but I think responsible water development over the years. In this regard, our constituents work very closely with the Federal Government. We have been partners in many of these projects.

I would like to commend the committee for the ongoing support and the impact that it has had on all of us in California.

California this year faces a number of crises. One of them deals with the ongoing drought, this being the fourth year of consecutive low water conditions. In fact, the drought this year is so severe that the Bureau tells me the water conditions are approaching the severity of the drought that happened in 1977.

We have lower than normal rainfall and snow pack and reservoir storage. Because of that, for the second time in history the Bureau is cutting back on agricultural releases as much as 50 percent to farmers.

I understand most farm groups will take water early in the season, peak out in July. There will be a first crop but there will be a remarkable drop off in production after that first crop.

The Bureau began receiving water from Shasta Reservior in March in order to preserve the quality of water in the San Joaquin Central Delta. The Fish and Game people tell me they look to a 30 percent rate for the salmon this year. I would remind the committee that 70 percent of the fish are caught off the shore in California from the Central River systems.

So there is a crisis and it needs to be dealt with. We hope that some of the projects we are suggesting will deal with it in a meaningful manner. At the same time, we place emphasis on good flood control needs, particularly we feel those acutely in Northern California.

Mr. Chairman, I am pleased to support in large part the Administration's fiscal year 1991 budget requests for water projects within the jurisdiction of the Army Corps of Engineers and the Bureau of Reclamation that affect my district in California. I will submit my statement in that regard.

Let me highlight a couple that are of particular interest to me. One, an ongoing effort, is Dry Creek Roseville. I share this area with Mr. Fazio. We have been concerned about serious flooding. We are asking $300,000 to go ahead with preconstruction engineering and design.

Secondly, the Sacramento/San Joaquin Delta Survey Study for the purpose of determining the degree of Federal interest in dealing with the fragile and critical water system in the Sacramento and San Joaquin Delta.

New Melones recreation, when we built that dam and provided that facility with the operational aspects, we also said there would someday be recreational facilities built there. We are behind schedule and the $5 million in the President's request is designed to build those recreation facilities.

On the American and Sacramento Rivers, $2 million is requested for a Corps' study on the expandable dry dam and on the Sacramento River Levy work. Rather than that project, I think we should be moving ahead with a multipurpose dam on the river.

In that regard, I will move to the Bureau of Reclamation. The President is requesting $1.5 million for the Auburn-Folsom South Unit. I think that we need $250,000 in additional funding and that is such high priority that I would be willing to take that money away from another project in order that it might be applied to the Auburn-Folsom South Unit.

The purpose is to complete the Feasibility Study and update the EIS for that project. My purpose in that is to have available before the Congress next year both the Corps' study and the Bureau's study which will allow us to make a meaningful comparison and allow the Congress to make a choice on what kind of project should be on that river.

We need water storage, flood control. Eventually, we will need the power. There is a commitment for local cost sharing which I am very pleased to talk about, the American River Authority, the Sacramento Area Water Association in San Joaquin County have indicated their intention to finance the water and power portions as well as to purchase the water.

For that reason, Mr. Chairman, I think this is a project that is sorely needed and economically viable. We do have a great deal of local enthusiasm for it and the $250,000 extra that I am requesting will be matched by local entities to provide the funding that the Bureau needs to complete those studies.

A letter of commitment has been sent promising the local share to Assistant Secretary John Sayre. So, Mr. Chairman, the needs and the support are real. They are ongoing. I appreciate the help of this committee in the past and particularly in this year of some urgent requests.

Mr. Fazio. Norm, first of all, I think we all want to congratulate you on the decision that you made very recently, a personal and difficult one, I am sure, to retire from Congress at the end of this term. I know that a number of the issues that you have highlighted in your remarks today are really part of an ongoing effort to raise the visibility and the prospects of a high dam at the Auburn site.

You and I, I think, are in sync on all the other things that you mentioned. We have been at some odds on that last point. Because I have a high priority of bringing flood control to Sacramento and the authorized project has not materialized, we have gotten the Corps of Engineers to look at a dam that would be expandable when the water and power needs were obviously there.

I don't have an immediate opinion on your request. I am particularly concerned that the Corps' study not be interrupted or put on hold and also that the Bureau's study be completed in a timely way.

We were told by Commissioner Underwood in his testimony before the committee that there were many uncertainties surrounding the multipurpose dam such as its size, scope, and project purposes.

The Bureau is not able to determine when they can complete the study or state it in a time frame that we need to meet the termination of the moratorium that protects Sacramento from higher flood insurance rates, which is going to run out.

He said many of the uncertainties cannot be controlled by the Bureau and we cannot guarantee, therefore, that such supporting material can be prepared within the short period of time we have available. In addition, we are particularly concerned that the target date for the authorization bill's submission to Congress in early 1992 be met because we cannot miss the time.

The community is under a tremendous flood threat. But I think we can work with you to see if these assurances can be found and conditions applied. I might also say that while I know San Joaquin County has water needs, the people above wish they would be addressed from the New Melones system and not on the south side of the Folsom South.

Let's hope we can keep these projects moving forward and not allow one to cancel out the other. In that spirit of cooperation, I would like to work with you in the next months.

Mr. SHUMWAY. San Joaquin County has made the decision to move ahead with the New Melones system. They realize that is a promising source and they are tapping into it. But they believe using the New Melones System on a conjunctive use basis with the Auburn-Folsom South System is the only long-term way to meet their needs. I have no intention of axing or taking away from the Corps' study. I think that it should move ahead.

My concern is that we have both studies ripen, or come to fruition so that the Congress and the region can make a wise choice. We are working with OMB. We expect by markup time we will have the assurances that you want as well as meeting the target date of 1992.

Thank you.

[The statement of Hon. Norm Shumway follows:]

STATEMENT BY THE HONORABLE NORMAN D. SHUMWAY (R.-CA.) BEFORE THE HOUSE APPROPRIATIONS COMMITTEE'S SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT: APRIL 4, 1990.

Mr. Chairman and members of the Subcommittee, I am pleased to have this opportunity to come before you today to testify on behalf of those water-related projects which are of extreme importance both to California's 14th Congressional District, which I represent, and to the State of California in general.

As the members of the Subcommittee well know, progressive yet responsible water development has, in many ways, allowed for California's success, growth, and prosperity. In an effort to continue these successful policies, local, state, and Federal governments, as well as the various non-governmental beneficiaries of water development, must remain active in moving forward as partners in the construction and maintenance of needed water projects. I would like to commend this Committee for the valuable role it plays in advancing these goals.

Northern California has been hit with a number of very dry water years recently, and 1990 is turning out to be another. The Bureau of Reclamation has already stated its intention to cut water deliveries in many parts of the state, and many local areas are talking about the need for rationing.

In addition, the flood control needs of northern California are also of major importance to the area. Because of these extreme water swings -- flood one year, drought the next -- the water project needs for northern California are particularly unique. As my good colleague and neighbor from Sacramento, Mr. Fazio, knows all too well, nowhere is this more evident than in our region of northern California.

The 14th Congressional District of California includes portions of our State's Central Valley, Mother Lode Country, and Sierra-Nevada Mountains. A substantial amount of our State's Federally-distributed Central Valley Project water-yield both originates and is delivered within this diverse region. As a result, many of the projects which I am supporting today affect not only my District but also many important interests throughout the entire State.

The 14th District includes an impressive agricultural industry which is essential to local economies and consumers nationwide. This agricultural industry is dependent upon an adequate supply of water, and correspondingly adequate water facilities, for its livelihood.

In coming before you today, I am pleased to support, in large part, the Administration's FY '91 budget requests for the water projects within the jurisdiction of the Army Corps of Engineers and the Bureau of Reclamation that affect my District in California. The proposals which I am advocating are:

ARMY CORPS OF ENGINEERS

1. Dry Creek, Roseville -- $300,000

The Dry Creek Study area has a long history of flooding. Flood problems result from excess runoff that overflows onto lands adjacent to inadequate drainage channels. Serious flooding occurred during the winter of 1983 inundating nearly 3000 acres of urban land in and around the Roseville community. Recent flooding in 1986 caused an estimated $18 million in damages in the Dry Creek Basin. I therefore strongly support the Administration's request for $300,000 for preconstruction engineering and design work to move forward toward resolving this problem.

2. Sacramento/San Joaquin Delta Survey Study -- $350,000

This flood damage prevention study will examine the needs and federal interest in providing improvements for flood control, recreation, fish and wildlife protection, and water quality as related to salinity intrusion due to levee failure and other water management problems in the Delta.

The Delta is a fragile and critical water system made up of 11,000 miles of leveed water channels and extremely fertile islands. Since 1900 there have been over 100 levee failures, with 40 occurring since 1930. As the Federal, state and local governments continue to look at plans which will increase the usage of these waterways as a route to transport water, no doubt the need for greater protection for this area will increase. I strongly support the Administration's FY 90 appropriation request for $350,000.

3. Lower San Joaquin River & Tributaries Clearing & Snagging -- $2 million

This important project is needed to clear the San Joaquin River Channel from brush growth that has resulted from decreased river flows due to operation of the Federal Friant Dam. I support the Administration's request of $2 million for this needed project.

4. San Joaquin River Basin - Calaveras River -- $325,000

The Administration's FY 91 request includes $325,000 for general investigation surveys for the Calaveras River. Due to the near flood problem in 1986 below New Hogan Reservoir, this investigation is most appropriate. I join the Administration in requesting $325,000 for this study.

5. San Joaquin River System Sedimentation Investigation -- $500,000

This funding is consistent with the California Water Commission's request. It will allow for a reconnaissance study of the San Joaquin River and the bypass systems to remove sediment and vegetation so the river will convey design flood flows.

6. New Melones Recreation Facilities -- $5 million

This funding request is consistent with the California Water Commission's recommendation. It is for construction of recreation facilities at the Glory Hole and Tuttletown recreation areas, pursuant to the project's original authorization. Existing facilities are clearly insufficient to take care of summer crowds.

7. American and Sacramento Rivers -- $2,000,000

This funding is for the Corps' on-going study of the flood control options for the American River Basin. The funding is for the feasibility study for an expandable dry dam and Sacramento River levee work. While I believe the Corps studies on the expandable dry dam should move forward so that implementation of an ultimate flood control solution will not be delayed, I don't believe the best alternative for the American River basin is the expandable dry dam.

Rather, I strongly believe that the long-envisioned, long-authorized multi-purpose Auburn Dam will best serve the needs of all the affected counties, including the desperate flood control needs of Sacramento County. Moreover, I am convinced that the overwhelming majority of Californians in these counties also support the multi-purpose project option. I will go into further detail on this when I discuss the Bureau's budget.

8. Operation and Maintenance

I support the FY '90 Army Corps of Engineers budget request made by the Administration for operation and maintenance for the following list of projects:

a. Farmington Dam
b. New Hogan Lake
c. New Melones Lake
d. San Francisco Bay - Delta Model Structure
e. San Joaquin River

BUREAU OF RECLAMATION

1. Auburn-Folsom South Unit -- $1.75 million

The Auburn Dam request made by the Administration for this year is the projected dollar amount required to maintain current Bureau operations in the Auburn area -- $1.5 million. I support that request plus I strongly urge the subcommittee to appropriate $250,000 additional money for the Bureau to complete the multi-purpose Auburn Dam feasibility study and update the project's EIS.

In 1986, the American River Basin experienced a serious flood which nearly resulted in disaster for the area. In 1987 and 1988, the same area experienced drought. And 1990 is shaping up to be another very dry year. Clearly, the American River basin is in dire need of significantly increased water storage and regulation capacity. Had the 1986 flood waters been captured and stored in a multi-purpose dam, the impact of the 1987 and 1988 drought would have been minimal.

Despite this need for more water, there are some, particularly in the Sacramento area, who favor a flood control-only project, or so-called "dry dam." Since a dry dam, even an expandable one, would provide flood control benefits for Sacramento, but would not store needed water for Placer, El Dorado and Sacramento counties, I oppose this alternative, and continue to support a multi-purpose Auburn Dam to provide for all of the many water, power, recreation and fisheries needs for the area.

In the past I have introduced legislation into the Congress to update and amend the multi-purpose Auburn Dam authorizing statute, and I have done so again in the 101st Congress. To ensure that the multi-purpose project protects the environment my bill, HR 2429, as it has in the past, requires that the dam be operated to augment and sustain "wild and scenic" flow levels for the Lower American River, and to increase recreation and fisheries at Folsom Lake. And to ensure that the project is completed in a fiscally responsible fashion, my bill further requires that those who benefit from the project must join with the federal government in paying for it.

For years opponents of the multi-purpose Auburn Dam have pointed to the lack of non-federal cost sharing partners as evidence that the project was not economical. These opponents have argued that if we truly needed a multi-purpose Auburn Dam somebody would step forward to help fund it. I am pleased to say that interested non-federal parties have stepped forward. The American River Authority (A.R.A.), a joint entity made up of officials from El

Dorado and Placer counties and local water districts, the Sacramento Area Water Association and the San Joaquin County Board of Supervisors have all officially declared their intent to finance the water and power portions of the project and to purchase the water.

This non-federal commitment action is irrefutable evidence that this project is both sorely needed and economically viable. Their action has served to expand the base of local support for this project and rejuvenate the enthusiasm of many long-time supporters. And it has sparked renewed interest on the part of the Interior Department to negotiate a federal/non-federal partnership which is fiscally realistic in these days of tight federal dollars.

Mr. Chairman, the $250,000 extra which I am requesting will be matched by the local entities with another $250,000. A letter of commitment to do so has already been sent by these local supporters to Assistant Secretary John Sayer.

To ensure that the Congress has all of the information it needs to make the right decision for the American River in 1992, it is critical that the Bureau of Reclamation follow a parallel track and complete its feasibility study and update its EIS for the multi-purpose project within the same timeframe as the Corps' work on the expandable dry dam. Appropriation of this modest request will ensure that the multi-purpose project is on equal footing with the expandable dry dam when Congress considers authorizing legislation in 1992.

2. Delta Water Management Program -- $350,000

This $350,000 request, consistent with the California Water

Commission's request, is for the Bureau to participate as partners with the Army Corps and the state Department of Water Resources in the Sacramento/San Joaquin Delta Survey studies. These studies, as explained above in the Army Corps section, examine the Federal needs and interest in providing improvements for flood control, recreation, fish and wildlife, and water quality as related to salinity intrusion due to levee failures and other water management problems in the Delta.

In addition, Mr. Chairman, I support those requests made by the City of Stockton for projects which are of importance to their many water needs.

Mr. Fazio. Thank you.

At this time I would like to yield to my friend, Jerry Lewis, who spends a lot of time lobbying our committee for a myriad of interests, but particularly those of San Bernardino County.

Mr. Lewis. Thank you, Mr. Chairman.

You will hear from other members of the delegation who are concerned about the Santa Ana flood plain. It is the biggest potential flood area in the country.

I think the delegation is here more than anything to express our deep appreciation for the work of this committee and their sensitivity to the potential significance of these problems.

As I express my own support for your continuing efforts on behalf of the Santa Ana and the constituents involved, I would like to introduce individuals from the county. Supervisor Bob Hammock, representing our Board of Supervisors is here today and you will also hear from Ken Miller, Director of the Flood Control District and our Washington representative, Pat Craig.

I must say that while the President's request of $56 million would adequately meet our needs in the fiscal year ahead of us, you and I both know that this project could expand exponentially in the years ahead.

It is a major challenge to the committee as well as our delegation. We want you to know that you are more than welcome to visit any time you like. We want to extend to the committee and its membership an invitation to the groundbreaking sometime in May.

Mr. Bevill. I hope we will have better weather than when we flew over it previously.

Mr. Lewis. Bob Dornan has guaranteed the weather.

Mr. Bevill. Then the pilot got lost.

Mr. Lewis. That is because I was giving directions.

Mr. Chairman, My statement involves a number of other projects, I would appreciate it if it were included in the record. You are going to hear a great deal from members who are much more knowledgeable and articulate. I appreciate your support. I plan to visit Sacramento as often as possible.

[The statement of Hon. Jerry Lewis follows:]

JERRY LEWIS
35TH DISTRICT CALIFORNIA

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CONGRESSMAN JERRY LEWIS
before the

HOUSE APPROPRIATIONS SUBCOMMITTEE
ON ENERGY AND WATER DEVELOPMENT

Mr. Chairman and Members of this Committee:

As always, it is a pleasure to appear before you today and share with you the progress of a number of federal projects which I strongly support in San Bernardino County. First, I would like to take a minute to introduce the Supervisor from my county, Bob Hammock. Also Ken Miller, San Bernardino County's Flood Control Director, and our Washington Representative Pat Craig. We are very pleased to have them with us for this important hearing.

Santa Ana Mainstem - I am pleased that we have made a great deal of progress on the Santa Ana. The Local Cooperation Agreement (LCO) for the project has been completed and signed. The first year's construction is underway and we are planning a ground breaking ceremony in May. This year's Presidental budget request of $65 million adequately reflects the funding needs of this project for 1991. I remain strongly supportive of the San Timoteo feature of the Santa Ana and appreciate the key interest of this committee. To show our continue gratitude, all Subcommittee Members will be invited to participate in this ground breaking event.

San Sevaine Creek Water Project is a Bureau of Reclamation "Small Project". The County of San Bernardino in conjunction with the cities of Rancho Cucamonga and Fontanta have submitted their Bureau Loan application Report to the Secretary of Interior. We are requesting that the Bureau provide $29.6 million in low interest loans. The total cost of this project is $67 million and the local sponsors will provide the remaining funds. When completed the water conservation facilities will conserve an estimated 25000 acre feet of storm run-off per year into the Chino gourndwater Basin. We are very grateful for the commmittees support for loan projects in the past.

Santa Ana Watershed Management Study - The President's budget requests $99,000 for the study of the Santa Ana Watershed and I strongly support this request. This important study could lead to a unified water management concept which could result in significant water conservation.

Whitewater River Basin - Last year the Water Resources Subcommittee authorized a study of the flooding problems along the Whitewater River. $340,000 is needed to do a reconnaissance phase feasibility study to evaluate the situation. If the study determines that flood control improvements are necessary, the local water districts are prepared to participate in a 50/50 cost shared detailed Survey Report study with the Corps of Engineers.

Buffalo Bill Dam - I strongly support the President's request for the improvements necessary for the Buffalo Bill Dam. The details of this enhanced project are similar to the improvements we are planning at Prado in my area. The Water Subcommittee is recommending authorization and the appropriation is critical.

Eastern Municipal Water District's Reclaimed Water Project - is seeking Federal financing under the Bureau of Reclamation's small project loan program. The Project would enlarge, rehabilitate and improve its water reclamation facilities. This would provide benefits for irrigated agriculture, wetlands enhancement, municipal and industrial water supply and groundwater replenishment.

Mr. **Fazio**. Thank you.

I will yield now to Norm Mineta, a leading member on the Public Works Committee, and a long-time advocate of water development in his area and the state.

Mr. **Mineta**. Thank you very much for this opportunity for California to come before your subcommittee.

Two projects are of special concern. $9 million for construction of the Guadalupe River Flood Control Project and $424,000 in pre-construction and design funds for Coyote and Berryessa Creeks will allow these vital projects to move forward.

I also support the Water District's request for projects on the Pajaro and Upper Guadalupe Rivers, as well as their request for the President's level of funding for the Bureau of Reclamation's San Felipe Project in the fiscal year 1991 budget.

On a separate topic, Mr. Chairman, I would like to urge you to fund fully the Army Corps of Engineers' effort to find a long-term dredge disposal site for the San Francisco Bay.

This project is absolutely necessary for our region's economic vitality. The search has been hampered in the past and I believe it is time to resume it in earnest.

Parallel to this action I hope the Corps will also be able to use their excellent resources to find a short-term disposal site.

We have immediate need to dispose of sludge from the Port of Oakland and the Alcatraz Island site is filling up quickly.

I hope that you will use your powers to fully fund the effort to find a short-term site.

Should additional funds be necessary for this purpose, I urge their full appropriation as well.

[The statement of Hon. Norman Y. Mineta follows:]

Remarks by
NORMAN Y. MINETA, M.C.

House Committee on Appropriations
Subcommittee on Energy and Water Development

April 4, 1990

Thank you, Mr. Chairman. I appreciate the chance to appear before the committee today.

Later today, several officials from my home district of San Jose, California, will testify about several projects of great importance to the Santa Clara Valley.

Giving testimony will be Joe Judge, of the Santa Clara Valley Water District Board of Directors. I would also like to recognize General Manager Ron Esau, Director Jim Lenihan, and Assistant General Manager Stan Williams, who are also representing the Water District.

If I may single out one person, I call to your attention General Counsel Albert Henley, who retires this spring after over 40 distinguished years of service to the Water District.

I wholeheartedly endorse their requests, which will greatly raise the quality of life in the Santa Clara Valley by removing fear of floods from rapidly developing parts of our area.

Two projects are of special concern. $9 million for construction of the Guadalupe River flood control project and $424,000 in preconstruction and design funds for Coyote and Berryessa Creeks will allow these vital projects to move forward.

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* * * * * * *

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I hope that you will use your powers to fully fund the effort to find a short-term site. Should additional funds be necessary for this purpose, I urge their full appropriation as well.

Thank you very much.

Mr. **Fazio**. Thank you, Norm.

I am trying to go in the order of appearance.

Bill Dannemeyer will be next.

Mr. **Dannemeyer**. Mr. Chairman, I would like to introduce four people from Orange County who will be testifying on part of the project.

George Osborne, Bill Zaun, and two members of the engineering profession, Robert Bein and Carl Nelson.

I have a statement that I will file on behalf of this request for affirmation of the request by the Administration for $56 million for this project this year.

To give you an idea of how the people in Orange County are aware of the flood threat, I got these figures yesterday from FEMA, they should have a good handle on them.

There were 124,940 flood control policies sold last year, calendar, in California. Orange County bear in mind has about 8.6 percent of the total state population of some 28 million.

Yet that percentage of the people bought, roughly, 32 percent of the policies, a little over 40,000 of them. I think that is a good indication that the people of Orange County, California, are paying through the nose to protect themselves against the flood danger we all know exists.

I am told this new dam which will be the first portion of the project built in San Bernardino, when it is completed in 1997, the people no longer require that residents of Orange County buy that flood insurance.

I mention that because I think it is an interesting figure on how serious we in Orange County are taking the flood threat and how much we are paying to protect our property from it.

[The statement of Hon. William Dannemeyer follows:]

STATEMENT OF THE HONORABLE WILLIAM E. DANNEMEYER

COMMITTEE ON APPROPRIATIONS

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

APRIL 4, 1990

Mr. Chairman and subcommittee members, I appreciate being given this opportunity to address you this morning concerning an issue of great importance to the citizens of Orange, Riverside and San Bernardino Counties. I come before you today in support of the Army Corp of Engineers appropriation request of $65 million for the initial construction phase of The Santa Ana River Flood Control Project.

The Santa Ana River encompasses 3200 square miles of land area inhabited by over 4 million residents. Over the past thirty years, both residential and commercial/industrial development has increased greatly within this region of Southern California. As a result, in the event of a major flood, there is the potentially signficant threat to both lives and property. In a study conducted by the Army Corp of Engineers in 1980, a severe flood could result in the destruction of over 500,000 homes, displace over 2 million people, and cause property damage in excess of $14 billion.

Based upon statistics provided by the Federal Emergency Management Agency residents of Orange County purhased 32% of the flood insurance policies and paid 31% of the flood insurance premiums in the state of California during 1989. These figures account for over 40 thousand polices and nearly $12.7 million in paid premiums.

According to the Corp of Engineers, this project is estimated to cost the federal and local governments approximately $1.3 billion. However, I caution my colleagues that the longer we delay the appropriation of funds for this project, the higher the land acquisition costs will be to complete it.

There is unanimity among the counties and communities along the Santa Ana River that the scheduled funding and eventual completion of this project is of paramount importance.

Again, I appreciate the opportunity to come before you on behalf of Orange County in support of the Santa Ana Flood Control Project.

Mr. FAZIO. Thank you.

I would like to yield to Bill Lowery.

He has a meeting with Budget Director Darman and because we all need effective representation to Mr. Darman, you can carry all our water if you attend that meeting on time.

Mr. LOWERY. Thank you, Mr. Chairman, and Members of the committee.

I want to express my support of the appropriation for $1.3 million to construct a flood control weir in the middle jetty of the San Diego River and Mission Bay.

They say it never rains in sunny Southern California. I am proud to say that our climate is almost that good in San Diego. The trouble is, when it does rain, the potential for flooding is great and damage can be extensive.

Originally it was designed to carry 115,000 cubic feet of water per second. However, at the mouth of the San Diego River, such a shoal has developed that the Corps estimates the channel could only carry one third of that, 35,000 cubic feet of water per second before it would flood the area.

The flooding estimates are that 250 buildings would be subjected to six to seven feet of flood water should that occur. The solution is very simple and cost effective.

It would be to put this weir into place, to cut the middle jetty a little slot out of it so the flood water could ease into the ocean.

The alternatives would be to dredge the shoal area and require yearly maintenance plus to extend the existing jetty. In the past, the Corps of Engineers has estimated that to do the work would be far more cost effective, and far less extensive work than the extension of the jetty and the maintenance required to remove the sand.

I would hope for your favorable consideration in the 1991 request for this direction to a Corps project that did not quite meet its advertised objectives.

Thank you very much.

[The statement of Hon. Bill Lowery follows:]

Congressman Bill Lowery's
Testimony
before the
Appropriations Subcommittee on Energy and Water
Chairman Tom Bevill
April 4, 1990

Mr. Chairman: I appreciate the opportunity to come before you today to express my support for an appropriation of $1.3 million to construct a flood control weir in the middle jetty of the San Diego River and Mission Bay.

They say it never rains in sunny Southern California. I'm proud to say that our climate is almost that good in San Diego. The trouble is, when it does rain the potential for flooding is great and damage can be extensive.

The weir is intended to decrease the flood threat to areas near the mouth of the San Diego River by compensating for a semi-permanent sand plug that could block part of the river mouth during flood flows.

Mr. Chairman, the original San Diego River Flood Control Project was designed to handle 115,000 cubic-feet-of-water-per-second. During construction, the Army Corps agreed to see how much sand would collect at the mouth of the flood channel at the request of those who use the area for recreation. That shoaling has become so massive that the Army Corps now estimates the channel could hold only 35,000 cubic-feet-of-water-per-second, before it floods the area.

Any major flood would inundate a good portion of the Ocean Beach community near the flood channel. The Corps estimates more than 250 buildings would be subjected to six or seven feet of floodwater.

If the weir is cut between the flood control channel of the San Diego River and the Mission Bay outlet, the problem is solved. The alternative to the weir, would be dredging the massive shoal and constructing an extension of the jetty. The Corps has not done a recent cost estimate but they have declared in the past that the weir is the least expensive way to go.

Mr. Chairman, to summarize, the flood control weir is essential for the completion of the flood control project and is necessary to prevent damage to areas adjacent to the diverted river. Accordingly, I believe the weir is an integral element of the originally authorized project. It will cost less than the originally designed project and will preclude yearly maintenance dredging. The City of San Diego is an active and willing partner in the flood control weir and has indicated its willingness to cost share if that proves necessary.

Mr. Chairman, possible language to address this request would read: $1.3 million is appropriated to construct the flood control weir in the middle jetty necessary to complete the construction of the flood control project for the San Diego River and Mission Bay as authorized by the River and Harbor Acts of 1945 and 1946.

I thank you for your consideration of this request as you deliberate the fiscal year 1991 Energy and Water Appropriation bill.

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Mr. **Fazio**. Thank you you, Bill. Next is Mel Levine.

Mr. **Levine**. I want to thank you for all the kindness in the past. I want to express my appreciation for your support of King Harbor in Redondo Beach.

This is an area that has been hard hit by natural disasters. I was sworn in to the House on January 3, 1983, and the first flood that hit the King Harbor during my tenure was later that same day.

I have been an annual visitor to your subcommittee to provide assistance to that invaluable resource for our community ever since. Every year you have been extremely helpful and helped to provide the infrastructure that has protected the community on an annual basis.

The security of King Harbor is extremely important to my district and me personally. After 11 years of study, planning, design and testing, the project to improve and extend the breakwaters at King Harbor is finally ready for construction.

According to the Army Corps, the cost will be $4.35 million. The City of Redondo Beach has committed the necessary matching funds.

But despite the pressing need to complete this project, the Administration has not asked for funding for any new construction starts.

The Army Corps, however, has provided me with assurances that if the funding is appropriated, they are prepared to complete the breakwater extensions.

The general policy of no new starts places the onus on Congress to recognize the importance of projects such as King Harbor. It also is shortsighted in the instance of King Harbor, because the Federal Government already has a substantial investment in the project.

And unfortunately, in the past when the Administration has delayed this project, we have found that frequent storms have resulted in a growing economic loss to the community.

Major storms have repeatedly damaged the harbor since 1978, in 1983, and in 1988, with damages to private and public property totaling nearly $30 million. Almost half of this is from one strom alone in 1988.

Note that these figures do not reflect the additional cost of the community of businesses that have temporarily, and some instances permanently, closed as a result of the storms.

Redondo Beach relies heavily on the revenue generated by the harbor itself and by related businesses. More than 8 million people visit this regional public facility each year, generating approximately $67 million in business receipts and $10 million in local government revenue.

The harbor employs nearly 2000 individuals. However, I should note that these figures are three years old and are today significantly lower because of the disasters in 1988.

The Army Corps plans are to raise the north breakwater 20 feet and extend it approximately 150 feet, and to raise a portion of the south breakwater to an elevation of 16 feet.

It is my understanding that because of the nature of the work, once construction is started, practical constraints require that full completion not be delayed. For this reason, it is my sincere hope that this will be the last year that I need to ask for your support for this project.

Any further delay risks public safety and guarantees additional economic losses. Therefore, in the face of what I know to be serious budget constraints, I believe the King Harbor project deserves the final support of Congress this year.

I hope that the subcommittee will be able to provide full funding to complete the breakwater work in fiscal year 1991.

I would like to turn briefly to two projects which the County of Los Angeles is seeking support for.

The first is the second phase of the California storm and tidal wave study, for which they are asking an appropriation of $400,000. The second project is the dredging of Marina Del Rey, for which they are seeking $1.7 million.

I wish to lend my support to these projects, which I know will provide important services to the local community and to California.

Of course, if I can provide any additional assistance I would be most happy to do so.

Thank you again for the opportunity to testify today.

I am very pleased that Chairman Anderson is here.

He represented this area before I had the chance to be here. He has represented this project well. It is a privilege to be able to work with you.

[The statement of Hon. Mel Levine follows:]

STATEMENT OF THE HONORABLE MEL LEVINE
APRIL 4, 1990
APPROPRIATIONS SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
REDONDO BEACH BREAKWATERS AND
COUNTY OF LOS ANGELES PROJECTS

MR. CHAIRMAN, I AM VERY GRATEFUL FOR THE OPPORTUNITY TO COME BEFORE YOUR SUBCOMMITTEE TODAY. I KNOW THAT YOU HAVE AN AMBITIOUS AGENDA, SO I WILL GET RIGHT TO THE POINT AND TRY TO BE BRIEF.

I AM, INDEED, VERY GRATEFUL TO THE SUBCOMMITTEE FOR THE YEARS OF SUPPORT YOU PROVIDED TO THE KING HARBOR IN REDONDO BEACH. AS YOU KNOW, THE SECURITY, BOTH PHYSICALLY AND FINANCIALLY, OF KING HARBOR IS EXTREMELY IMPORTANT TO MY DISTRICT AND TO ME PERSONALLY.

AFTER ELEVEN YEARS OF STUDY, PLANNING, DESIGN, AND TESTING, THE PROJECT TO IMPROVE AND EXTEND THE BREAKWATERS AT KING HARBOR IS FINALLY READY FOR CONSTRUCTION.

ACCORDING TO THE ARMY CORP, THE COST WILL BE $4.35 MILLION. THE CITY OF REDONDO BEACH HAS COMMITTED THE NECESSARY MATCHING FUNDS.

BUT DESPITE THE PRESSING NEED TO COMPLETE THIS PROJECT, THE ADMINISTRATION HAS NOT ASKED FOR FUNDING FOR ANY NEW CONSTRUCTION STARTS. THE ARMY CORPS, HOWEVER, HAS PROVIDED ME WITH ASSURANCES THAT IF THE FUNDING IS APPROPRIATED, THEY ARE PREPARED TO COMPLETE THE BREAKWATER EXTENSIONS.

THE GENERAL POLICY OF NO NEW STARTS PLACES THE ONUS ON CONGRESS TO RECOGNIZE THE IMPORTANCE OF PROJECTS SUCH AS KING HARBOR. IT ALSO IS SHORTSIGHTED IN THE INSTANCE OF KING HARBOR, BECAUSE THE FEDERAL GOVERNMENT ALREADY HAS A SUBSTANTIAL INVESTMENT IN THE PROJECT.

AND UNFORTUNATELY, IN THE PAST WHEN THE ADMINISTRATION HAS DELAYED THIS PROJECT, WE'VE FOUND THAT FREQUENT STORMS HAVE RESULTED IN A GROWING ECONOMIC LOSS TO THE COMMUNITY.

MAJOR STORMS HAVE REPEATEDLY DAMAGED THE HARBOR SINCE 1978, WITH DAMAGES TO PRIVATE AND PUBLIC PROPERTY TOTALING NEARLY $30 MILLION. ALMOST HALF OF THIS IS FROM ONE STORM ALONE IN 1988. NOTE THAT THESE FIGURES DO NOT REFLECT THE ADDITIONAL COST TO THE COMMUNITY OF BUSINESSES THAT HAVE TEMPORARILY, AND SOME INSTANCES PERMANENTLY, CLOSED AS A RESULT OF THE STORMS.

REDONDO BEACH RELIES HEAVILY ON THE REVENUE GENERATED BY THE HARBOR ITSELF AND BY RELATED BUSINESSES. MORE THAN 8 MILLION PEOPLE VISIT THIS REGIONAL PUBLIC FACILITY EACH YEAR, GENERATING APPROXIMATELY $67 MILLION IN BUSINESS RECEIPTS AND $10 MILLION IN LOCAL GOVERNMENT REVENUE. THE HARBOR EMPLOYS NEARLY 2000 INDIVIDUALS. HOWEVER, I SHOULD NOTE THAT THESE FIGURES ARE THREE YEARS OLD AND ARE TODAY SIGNIFICANTLY LOWER BECAUSE OF THE DISASTERS IN 1988.

THE ARMY CORPS PLANS ARE TO RAISE THE NORTH BREAKWATER 20 FEET AND EXTEND IT APPROXIMATELY 150 FEET; AND TO RAISE A PORTION OF THE SOUTH BREAKWATER TO AN ELEVATION OF 16 FEET.

IT IS MY UNDERSTANDING THAT BECAUSE OF THE NATURE OF THE WORK, ONCE CONSTRUCTION IS STARTED, PRACTICAL CONSTRAINTS REQUIRE THAT FULL COMPLETION NOT BE DELAYED. FOR THIS REASON, IT IS MY SINCERE HOPE THAT THIS WILL BE THE LAST YEAR THAT I NEED TO ASK FOR YOUR SUPPORT FOR THIS PROJECT.

ANY FURTHER DELAY RISKS PUBLIC SAFETY AND GUARANTEES ADDITIONAL ECONOMIC LOSSES. THEREFORE, IN THE FACE OF WHAT I KNOW TO BE SERIOUS BUDGET CONSTRAINTS, I BELIEVE THE KING HARBOR PROJECT DESERVES THE FINAL SUPPORT OF CONGRESS THIS YEAR. I HOPE THAT THE SUBCOMMITTEE WILL BE ABLE TO PROVIDE FULL FUNDING TO COMPLETE THE BREAKWATER WORK IN FISCAL YEAR 1991.

I WOULD LIKE TO TURN BRIEFLY TO TWO PROJECTS WHICH THE COUNTY OF LOS ANGELES IS SEEKING SUPPORT FOR. THE FIRST IS THE SECOND PHASE OF THE CALIFORNIA STORM AND TIDAL WAVE STUDY, FOR WHICH THEY ARE ASKING AN APPROPRIATION OF $400,000. THE SECOND PROJECT IS THE DREDGING OF MARINA DEL REY, FOR WHICH THEY ARE SEEKING $1.7 MILLION. I WISH TO LEND MY SUPPORT TO THESE PROJECTS, WHICH I KNOW WILL PROVIDE IMPORTANT SERVICES TO THE LOCAL COMMUNITY AND TO CALIFORNIA.

OF COURSE, IF I CAN PROVIDE ANY ADDITIONAL ASSISTANCE I WOULD BE MOST HAPPY TO DO SO. THANK YOU AGAIN FOR THE OPPORTUNITY TO TESTIFY TODAY.

Mr. FAZIO. Now someone who bridges the San Bernardino Riverside border, George Brown of the inland empire.

Mr. BROWN. Thank you, Mr. Chairman.

There is little I can add to what has been said. You have almost the entire California Delegation and the entire delegation from Orange, San Bernardino and Riverside County here to indicate our support for the President's budget for the Santa Ana River and other activities which we are interested in.

The representation from San Bernardino and Riverside has been introduced. I would like to add my welcome to Supervisor Hammock, Ken Miller, Ken Edwards and those representing the flood control districts.

They can certainly provide any additional detail that you need.

I want to say that having worked with this committee for many, many years that I am extremely grateful to you, Mr. Bevill and Mr. Myers for your consistent and helpful attitude toward our projects. I know that you will continue to show that same concern in the future.

I want you to know we appreciate it very much.

[The statement of Hon. George E. Brown follows:]

CONGRESSMAN GEORGE E. BROWN, JR.'s

Testimony before the House Appropriations Subcommittee on Energy and Water Development

April 4, 1990

Mr. Chairman, I appreciate the opportunity to testify today on behalf of water projects in California. I would like to highlight the importance of full funding for the Santa Ana Mainstem Project.

As you know from your Committee's careful review of the Santa Ana project over the past several years, this is one of the highest priority flood control efforts west of the Mississippi. As the result of extraordinary growth which has occurred in Riverside, San Bernardino, and Orange Counties in Southern California, more than two million people now live in the flood plain of the Santa Ana River. According to the Army Corps of Engineers, a major flood of the Santa Ana--such as the one which occurred in 1938--could result in damage of more than $12 billion. This would be equal to the structural damage caused by Hurricane Hugo and the Loma Prieta earthquake combined.

Mr. Chairman, last year--with your Committee's help--Congress provided the critical $20 million in initial construction funds to set the Santa Ana project on its course. Ground-breaking for the Seven Oaks Dam is expected in June. The President's request for $65 million is essential to keep this valuable program moving forward. I urge your support for the full request, and I urge your careful review of the testimony which will be submitted later today by representatives of both the Riverside and San Bernardino County Flood Control Districts.

I also urge your close attention to the testimony that will be delivered this afternoon by the Eastern Municipal Water District and the San Bernardino Valley Water District in support of the Santa Ana Watershed Management Study. This project would develop a long-range management program for the upper Santa Ana River Watershed.

Thank you again for the opportunity to testify today.

Mr. MYERS. Thank you.

Mr. FAZIO. Now we go to the man whose departure from Redondo Beach caused the tidal wave. Bob Dornan.

Mr. DORNAN. After six years of representing the beautiful West Los Angeles County coastline, I noted as I flew off that the very Heavens themselves were inspired to create a meteorological display of such proportion that the incoming Congressman, Mel Levine, has never forgotten that afternoon.

Nevertheless, the fates were also kind to me, and two years later I was able to represent yet another part of beautiful Southern California where you all are invited to come to Knottsberry Farm, Disneyland, or maybe even to see an assault on Joe Montana's record by the Rams. And our baseball team is not called the Anaheim Angels but the California Angels.

We want you all to consider that Gene Autry team your Angels, also.

I want to underscore what your leader and my leader, Jerry Lewis, has told you about the Santa Ana flood plain.

Mr. Chairman, I am here today in support of the Bush Administration's $56 million request to continue construction of the Santa Ana River Mainstem project. I would like to thank the committee for all its previous support and ask that my testimony be put, in its fulsome literary value, into the record and say this is the single most significant piece of federal legislation to have affected my district in many, many years.

When I came before this subcommittee on my recycling here in March of 1985, there had been a decade long log-jam, no blame to the distinguished Members of this panel, but the authorization had been held up for years.

Yet after many years of hard work, construction has finally begun on this project, starting from Jerry Lewis' beautiful mountain area in his district. Mr. Chairman, the three counties which are the local sponsors of the project—Orange, San Bernardino, and Riverside—have worked closely together on all aspects of the project and are in complete agreement on all aspects of the construction phase.

The counties are committed to assisting the Army Corps of Engineers in completing the project as soon as possible. Let me just briefly touch on some of the important progress that has been made to date.

The $20 million appropriated last year to being construction has allowed the local sponsors to move ahead with the acquisition of lands, rights of way, easements, and relocations as required by the Water Resources Act of 1986.

The Army Corps of Engineers is currently moving on a test fill in the vicinity of where the Seven Oaks Dam will be located.

The local sponsors are negotiating with FEMA to determine when flood insurance requirements can be lifted. As you may know, such requirements cannot be lifted until a certain percentage of the project is completed. In this case, completion of the Seven Oaks Dam will probably be enough for FEMA to lift the requirements.

And believe me, Mr. Chairman, flood insurance is extremely costly in Southern California. So the sooner we can complete this phase the better for the people living within the flood plain.

The Federal Energy Regulatory Commission, Southern California Edison, and the local sponsors are negotiating on the relocation of the Southern California Edison powerplant currently located at the San Bernardino Mountains near the site of the new Seven Oaks Dam.

Mr. Chairman, all this demonstrates an aggressive local program to move the project expeditiously forward.

Congress and the local sponsors have a long record of support for the Santa Ana River Mainstem project.

I would therefore request that the subcommittee continue the support it has shown in the past, and which is so greatly appreciated by myself and my constituents, for the Santa Ana project by supporting the President's request of $56 million to continue construction.

In closing, I again thank the subcommittee for its past work, and I look forward to supporting the Energy and Water Development Appropriation bill on the Floor of the House.

Thank you, Mr. Chairman.

As I said, everything is moving on ahead, we owe it to the distinguished Members of this pane.

There would be no more ghastly sight than to see Mickey, Donald, Snoopy and all the rest of the gang standing on top of the beautiful rides and exhibits at Disneyland and Knottsberry Farm looking down on 20 feet of water.

Keep up the good work. Do it for Mickey, Donald, and Snoopy.

I bring you the heartfelt gratitude of all the tourists and of those lucky enough to live in the Orange County area.

Mr. FAZIO. Thank you for your annual performance.

[The statement of Hon. Robert K. Dornan follows:]

Honorable Robert K. Dornan

Testimony Before the House Appropriations Subcommittee on Energy and Water Development

Honorable Tom Bevill, Chairman
April 4, 1990

Thank your Mr. Chairman and members of the subcommittee. It is a pleasure to be here today as a representative of the 38th District of California in support of the Bush Administration's $65 million request to continue construction of the Santa Ana River Mainstem project in fiscal year 1991.

Before I begin my testimony, I would like to thank the subcommittee for its previous support for the Santa Ana River project. The subcommittee has often appropriated sums greater than those requested by the Administration because of the need to move forward with this vital project more quickly. As you know, a substantial portion of the Santa Ana flood plain is located in my district. Should the Santa Ana River flood its banks again, the homes and businesses of thousands of my constituents would be destroyed. That is why I have said that this is the single most significant piece of federal legislation affecting my district in many years.

When I came before this subcommittee in March of 1985, there had been a decade-long logjam that held up the authorization of many important water projects all over the country. I told the subcommittee then that all of us in Orange, Riverside, and San Bernardino counties impatiently awaited the day when Congress would pass legislation allowing construction on the Santa Ana River project to begin. I am therefore very pleased that the first

phases of construction were finally begun this current fiscal year. It could not have happened without the ongoing support of this subcommittee, and for that you have my thanks.

Mr. Chairman, the three counties which are the local sponsors of the project--Orange, San Bernardino, and Riverside--have worked closely together on all aspects of the project and are in complete agreement on all aspects of the construction phase. The counties are committed to assisting the Army Corps of Engineers in completing the project as soon as possible. Let me just briefly touch on some of the important progress that has been made to date.

- The $20 million appropriated last year to begin construction has allowed the local sponsors to move ahead the acquisition of lands, rights of way, easements, and relocations as required by the Water Resources Act of 1986.
- The Army Corps of Engineers is currently moving on a test fill in the vicinity of where the Seven Oaks Dam will be located.
- The local sponsors are negotiating with FEMA to determine when flood insurance requirements can be lifted. As you may know, such requirements cannot be lifted until a certain percentage of the project is completed. In this case, completion of the Seven Oaks Dam will probably be enough for FEMA to lift the requirements. And believe me, Mr. Chairman, flood insurance is extremely costly in Southern California. So the sooner we can complete this phase the better for the people living within the flood plain.
- The Federal Energy Regulatory Commission, Southern

California Edison, and the local sponsors are negotiating on the relocation of the Southern California Edison powerplant currently located in the San Bernardino Mountains near the site of the new Seven Oaks Dam.

Mr. Chairman, all this demonstrates an aggressive local program to move the project expeditiously forward.

Congress and the local sponsors have a long record of support the Santa Ana River Mainstem project. I would therefore respectfully request that the subcommittee continue the support it has shown in the past, and which is so greatly appreciated by myself and my constituents, for the Santa Ana project by supporting the President's request of $65 million to continue construction.

In closing, I again thank the subcommittee for its past work, and I look forward to supporting the Energy and Water Development Appropriation bill on the floor of the House.

Thank you, Mr. Chairman.

# # #

Mr. FAZIO. Let's go to Chris Cox, our new neighbor.

Mr. COX. There are a few people from Orange County I would also like to recognize. Later on, Supervisor Gaddi Vasquez will be here to tell you about the feelings of the county on the project.

I would like to mention George Osborne, who is the father of the project.

Mr. FAZIO. You probably would not be laying out $1 billion if it were not for him.

Mr. COX. Bill Zaun, the Orange County Director of Public Works and also Bob Bein.

I would add two or three things and maybe this is at some point redundant. First I would like to emphasize the scope of this potential disaster.

It is estimated that 3000 people would be killed and the property damage is estimated in excess of $1 billion. The economic dislocation would affect not only California, not only America, but indeed the entire globe.

Three thousand people dying in a single disaster is worse than the Hindenburg, the Titanic, and even Pearl Harbor. So we are wise to focus as this committee is doing and as this Congress is doing on means to address and prevent such a flood threat.

Secondly, I think it is something of a misnomer to call it a 100-year flood. It is called that because statistically speaking a devastating flood of the type I mentioned would occur once every 100 years.

It could occur tomorrow or any time. We could just as appropriately call it the imminent catastrophic flood. This is obviously a project of perpetuity.

I am delighted about the attention this has committee has paid to it. I am delighted with the start up in funding that came up last year and I am here to join with my colleagues to support the request that the $65 million be funded for 1991.

[The statement of Hon. Christopher Cox follows:]

Testimony of Congressman Christopher Cox

Committee on Appropriations
Subcommittee on Energy and Water Development
April 4, 1990

Thank you, Mr. Chairman, for the opportunity to testify this morning about one of the most important construction projects in our nation, the Santa Ana River Mainstem Project.

Mr. Chairman, last year I testified before this Subcommittee to express my support for initial funding of the Santa Ana River Mainstem Project. At that time, I expressed my concerns that construction of this important project, originally authorized by the Congress in 1976, could not afford to wait any longer.

As you know, the Project was designed to protect against an impending flood disaster that the Army Corps of Engineers has described as the most serious flood threat west of the Mississippi; a threat which could--without warning--kill more than 3,000 people, and which would have a crippling effect on Southern California, with harmful repercussions for the entire state, and, indeed, the entire nation.

I was therefore extremely pleased when the Congress agreed last May to appropriate the initial $20 million start-up funding for the project.

It is now essential that we continue what the Congress started last year. The flood threat has not disappeared. The potential consequences, in terms of lives and dollars, are just as dire as they were a year ago.

It is ironic that this inevitable flood disaster we face in Southern California is occasionally referred to as a "100-year flood." It is so called because statistically speaking, such a devastating flood will occur once, on average, every one hundred years. But an equally appropriate name would be the "imminent catastrophic flood"--because this disaster is just as likely to happen next year as it is 100 years from now. We must act, and act now

This is obviously a project with tremendous merit, and one which needs and deserves continued Congressional support. I respectfully request that the Congress support the Administration's appropriations request for the Santa Ana Mainstem Project for FY 1991.

Thank you.

Mr. **Fazio**. We are running late, with a number of Members yet to go. Let's try to be brief.

I will yield to Rick Lehman, a good friend and neighbor.

Mr. **Lehman**. Thank you very much, Mr. Chairman. I appreciate this opportunity once again to appear before this committee.

This year I feel more urgency for some requests because there are some very important things in California that needs attention paid to them.

Right now our major conveyance facilities are in a very sorry state of affairs. Some of these are the consequences of our own neglect. Let me give three examples about the major drainage in the state.

First, Shasta. We are experiencing the fourth year of serious drought. We had to change the way we managed this important facility in Southern California. Because of the need to put cold water into the Sacramento River to protect the salmon run which is now a threatened species, we have to bypass the power plant at Shasta. I believe we need to augument the budget for about $10 million to allow us to get the benefit of the power while protecting the salmon in the San Joaquin.

We do not know how long the drought will continue, but given the environmental concerns there and the need to maximize the power plant that we have already paid for, I believe this deserves immediate attention.

Moving south along the San Joaquin, sedimentation is clogging the river channel. This committee has been active in the past helping us find funds for the Corps. Unfortunately, there is a legal and regulatory logjam that has prevented us from clearing the sediment that has been rising up. I think it is clear that we need to fund the Mainstream and Tributaries Study to evaluate the flood control and its possibilities on the river as a whole. I don't think we can any longer look at one problem in isolation because it cannot be solved that way. You put something down here and it pops us over there. You have to look at the entire basin in terms of flood control potential.

Further south along the river we have another problem in the Arroyo Pasajero area. The California aqueduct blocks many drainages. Flood flows are generally stored by the Army Corps along that route and then released into the canal at appropriate times.

Greater flood flows than anticipated have occurred and we found asbestos in the Arroyo sediment, so we have a major problem on what to do with that water. The Corps believes that for $500,000 they can begin the Reconnaissance Study on determining what we should do about a potentially very serious health problem.

Three other objectives I would like continued help for are: The San Joaquin Conveyance Study; I am requesting $50,000 for its completion and $150,000 for offstream storage studies. Also, $325,000 for the San Joaquin River Basin-Calaveras River Study to initiate the Feasibility Study once a cost sharing agreement is signed. Also, $5 million instead of $2 million which the Administration requested for the New Melones recreation construction.

Mr. **Fazio**. How much more do you want?

Mr. **Lehman**. Just three more. The major part of the administration's request is for administrative facilities and I want to give them something to administer. We don't want to see buildings there without recreational facilities to administer.

[The statement of Hon. Richard Lehman follows:]

HONORABLE RICHARD H. LEHMAN
TESTIMONY BEFORE THE HOUSE APPROPRIATIONS ON ENERGY AND WATER DEVELOPMENT
9:30 am, WEDNESDAY, APRIL 4, 1990
2362 RAYBURN HOUSE OFFICE BUILDING

Mr. Chairman,

As usual, I appreciate the opportunity to appear here today and share with you some of the projects, whose funding, I think is critical to the economic stability of the State of California and the health of many of its residents. The importance of this hearing might be measured by the direct correlation of the number of interested members of the California Delegation and the size of the crowd you have here today.

I know that members of this committee are faced with an extremely difficult task, given the budget situation, of trying to meet all of the requests that are made each year for energy and water development. But, I think that I speak for all of California when I say that this committee has done an irreproachable job in meeting our state's requests and balancing all of our needs with relatively limited resources. However, despite the committee's best work in addition to projects carried over from previous years, the list of crucial projects that need funding continues to grow. I'd like to take just few moments to express my support for some of the projects I believe are most crucial to California.

ARMY CORPS OF ENGINEERS

NEW MELONES RECREATION CONSTRUCTION

Throughout the previous administration, I argued to persuade the administration to recognize it's obligation and commitment to the people of Tuolumne, Calaveras, and Stanislaus Counties with regard to recreation development at New Melones Reservoir. I had hoped that the new administration would be more reasonable, but apparently it believes a new administration building is more important than the needs of the needs of the people.

As in previous years, the administration continues to try to impose a cost sharing requirement on recreation development at the reservoir. This is contrary to the authorizing legislation and the will of Congress. Since the project began to fill in 1982-83 the citizens of the affected counties have had to cope with a recreation magnet with intolerably inadequate facilities. The situation has often been a safety hazard and frequently costing the counties more than the benefit that the project was supposed to provide.

The current recreation development plan is far smaller than what was originally proposed and promised by the Corps. Despite this major reduction, the administration refuses to proceed. With the help and direction of this committee the Corps has been forced to construct some minimal facilities, but there is still over $ 6 million worth of work to be done on the main facilities. Last year the committee included nearly $1 million, but it was removed in conference. Again this year, I am joined by the Commission in supporting an augmentation of $3 million to the administration's request of $2 million. I would urge the committee to fund this amount.

ARROYO PASAJERO

The Department of Water Resources and the Corps have recently identified a serious problem along the California Aqueduct, the canal that carries much of the municipal and agricultural water to California's central and southern population. The alignment of the canal takes it across many natural drainages along the west-side of the San Joaquin Valley. Clearlt this creates the need for some additioanl flodod control planning.

The Arroyo Pasajero is one of the major drainages that the Aqueduct blocks. By design, these flood flows are stored and released into the canal at the appropriate time. However, greater flood flows than expected and the recent discovery of asbestos laden sediment in the Arroyo has created the potential for a serious health problem.

I strongly support the addition of $500,000 to the Corps budget to conduct a one year reconnaissance study for correcting this problem. Although it was not included in the president's budget, a solution to this situation is vital to the health of literally millions of Californians.

SAN JOAQUIN RIVER MAINSTEM AND TRIBUTARIES

Due to sedimentationm, the San Joaquin River has degraded substantially in its flood carrying capacity. For some time, the Congress, through the Corps, has attempted to deal with the problem with an approach that has been controversial and ineffective. Most recently the project has met with a legal logjam betweeen state, local, and federal agencies seems immovable. It seems to me that one of the reasons the past approach has been so ineffective is because we did not look at the operations of the river as a whole. The evidence presented by the Corps is making it clear to me that on rivers which are heavily utilized, operational problems should be looked at in terms of the whole watershed management.

The Mainstem and Tributaries study will begin the process of evaluating the flood control needs of the entire San Joaquin river and it's tributaries as a whole. Without a better understanding of how the flood capacity of the river is effecting all of its other uses, we can do little to improve the flood control. The Corps, the Department of Water Resources, and the Water Commission all support this reconnaissance study, and I would urge the committee to include $500,000 in the Corps budget for this purpose.

REDBANK AND FANCHER CREEKS

This flood control project serves the city and county of Fresno and has been considered an example of good solid projects. The project is currently ahead of schedule by one year and $2 million below budget. Clearly this is a project that deserves the attention of the committee. I agree with the president and recommend that committee fund the project at the level of $7.5 million.

SAN JOAQUIN RIVER BASIN- CALAVERAS RIVER

As the committee knows, in 1986 San Joaquin County experienced severe flooding along the Calaveras River and it's tributaries below New Hogan dam. The Corps began reconnaissance studies on the project in the 1989 fiscal year. A feasibility study will be started after a cost-sharing agreement is signed if the reconnaissance study shows a positive benefit-cost ratio.

Although the study is scheduled to be completed this month, the funds requested are to be used to complete the reconnaissance study and initiate the feasibility study. I urge the committee to fund the project at a level of $325,000.

BUREAU OF RECLAMATION

Shasta Dam Temperature Control Device

California's continuing drought has exacerbated a persistent problem at Shasta Dam. Because of the configuration of the dam's penstocks, during extremely low reservoir levels the Bureau has to bypass the powerplant in order meet water quality temperature requirements downstream in the Sacramento River for fisheries. The listing of the winter run salmon as a threatened species list provides a clear and urgent need to deal with this problem immediately.

This project addition will allow the colder lower level water to be drawn from the lake and run through the powerhouse. As a result, the fish will not suffer from excessive water temperatures at critical times and power revenues will not be lost. I support the Commission's recommendation of $10,640,000 augmented to the Bureau's budget to begin this project immediately.

Off-Stream Storage

For several years the Bureau has participated jointly with the state in an off-stream storage investigation. I believe that we have come to regard off-stream storage as one of the most viable options in meeting our water supply needs for both present and uture. These studies are nearing completion, however, if we are to eventually develop adequate off-stream sights, these studies must be completed as soon as is feasible.

The amount requested by the president is not sufficient to complete the feasibility study this year. I would like to join with the Water Commission in supporting an appropriation of $150,000 for this purpose.

SAN JOAQUIN VALLEY CONVEYANCE STUDY

I have appreciated the committee's assistance with this project, and I believe the fruits of our labor will soon bear fruit. After several reviews, the Bureau is expected to release the feasibility study for the San Joaquin Valley Conveyance study this month. Although the preferred alternative likely to be identified in the study is less of the conventional bricks and mortar project: it will be more cost efficient, less environmentally controversial, and generally the progressive water project of the future. This study should allow the authorizing committee to proceed with a timely consideration of the project for authorization.

While the study is nearly complete there is a need for funds to finish the remaining reviews. The Bureau's budget request does not account for the final "mopping up" and should be augmented to include $50,000 for this purpose.

Mr. Chairman, once again, I want to express my sincere appreciation for the committee's work in this area. Tis concludes my statement. Thank you.

Mr. Fazio. Thank you. I would like to yield to Bob Lagomarsino.

Mr. Lagomarsino. Thank you. I deeply appreciate the opportunity to appear before this committee once again. I guess I have every year since I have been in Congress, and I would like to thank you for your past support.

It is clear to me and I know to my constituents that your generosity in the past has saved many millions of dollars in property damage, economic distress, injury, and even loss of life, for which we are very grateful.

The requests which we are making today fall into those same categories, and I would like to start off, Mr. Chairman, by introducing a number of my constituents who are here and who will provide more detail on those projects.

First, Mrs. Sheila Lodge, the Mayor of Santa Barbara; Mr. John Flynn, Ventura County Supervisor; Mr. Jerry Nowak, Ventura County Flood Control Engineer; Mr. Richard Parsons, General Manager of the Ventura Port District—and I might add, the chairman this year of the California Marine Affairs and Navigation Council; Mr. Lynn Mulhardt, Chairman of the United Water Conservation District Board of Directors; Mr. Sheldon Berger, a Director of that Board; and Mr. Fred Gientke, the General Manager.

Mr. Chairman, in the interest of time, I will simply identify those projects which we are supporting here today, and I ask that we be allowed to include additional material and comments in the record.

In the City of Santa Barbara, Mr. Chairman, we support the Army Corps of Engineers' request for $150,000 for preconstruction engineering and design of the Harbor Improvement Project, and $2,750,000 for dredging at the harbor. One of the aims of the Design Study, Mr. Chairman, is to reduce the need for annual dredging at the harbor, a point which the Mayor will address in her testimony. We also support the Corps' request for $550,000 for preconstruction engineering and design of the Lower Mission Creek Flood Control Project.

In Santa Barbara County, Mr. Chairman, we are requesting $300,000 for preconstruction engineering and design of the Carneros Creek Flood Control Project. This is a downscoped project which will provide protection to the Santa Barbara Municipal Airport and related facilities, as well as enhance environmental values at the Goleta Slough.

We are seeking reauthorization of this project in the water development bill pending before the Public Works Committee, and the Corps indicates it has the capability for this amount in fiscal year 1991. The California Water Commission supports this request. We also support the request for $122,000 for the Santa Barbara County Beach Erosion Study.

In Ventura County, Mr. Chairman, we support the request of the Corps for $1,270,000 for dredging at Ventura Harbor and $210,000 for preconstruction engineering and design of the harbor entrance redesign. The entrance redesign, which was approved last month by the Board of Engineers for Rivers and Harbors, is designed to reduce the need for annual dredging of the entrance, which experiences severe schoaling problems.

Incidentally, at this point, Mr. Chairman and, Mr. Myers in particular, I would like to express my appreciation to the Corps and to you for restoring the upcoast groin near the harbor.

Mr. Myers. It wasn't easy.

Mr. Lagomarsino. I know, but it was not bad.

The Ventura County Board of Supervisors and the City of Santa Paula have requested $200,000 to update and revise the economic analysis for the previously authorized Santa Paula Creek Flood Control Project. The Corps of Engineers and the county are also supporting an appropriation of $900,000 for a flood warning system in the Santa Clara River watershed, similar to a project currently underway on the Whitewater River near Palm Springs. This project has the potential to save many lives. The county is also requesting $400,000 for an update and review of the economic analysis of the Calleguas Creek Project. Although this project is not in my district, flooding on the creek has inundated the Point Mugu Naval Base and I support this request.

Mr. Chairman, the problem with the water in California is always that there is too much of it or not enough of it. In that regard, I support the Bureau of Reclamation's request for $185,000 for operations and maintenance of the Cachuma Project in Santa Barbara County, and $280,000 for the safety of Dams Program at Bradbury Dam on Lake Cachuma.

In addition, I am asking $300,000 to allow the Corps of Engineers to do a study of possible emergency sources of water for Santa Barbara and Ventura Counties. I just learned this is the driest year of this century in my district. We are in the fourth year of a drought. We need to explore all possibilities.

I mentioned the Freeman Diversion Project. We are all grateful for that and we hope you will support this modest effort to insure the continued availability of water, the lifeblood of our community.

Thank you, Mr. Chairman.

[The statement of Hon. Robert J. Lagomarsino follows:]

TESTIMONY OF
HON. ROBERT J. LAGOMARSINO
BEFORE THE
HOUSE APPROPRIATIONS COMMITTEE
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
HON. TOM BEVILL, CHAIRMAN
APRIL 4, 1990

THANK YOU, MR. CHAIRMAN. AS ALWAYS, I DEEPLY APPRECIATE THE OPPORTUNITY TO APPEAR BEFORE THE COMMITTEE, BOTH TO SUPPORT NEEDED PROJECTS IN MY DISTRICT AND TO THANK YOU FOR YOUR PAST SUPPORT OF OUR NEEDS. IT'S CLEAR TO ME AND I KNOW TO MY CONSTITUENTS THAT YOUR GENEROSITY IN THE PAST HAS SAVED MANY MILLIONS OF DOLLARS IN PROPERTY DAMAGE, ECONOMIC DISTRESS, INJURY, AND EVEN LOSS OF LIFE, FOR WHICH WE ARE VERY GRATEFUL.

THE REQUESTS WHICH WE ARE MAKING TODAY FALL INTO THOSE SAME CATEGORIES. AND I'D LIKE TO START OFF, MR. CHAIRMAN, BY INTRODUCING A NUMBER OF MY CONSTITUENTS WHO ARE HERE AND WHO WILL PROVIDE MORE DETAIL ON THOSE PROJECTS. FIRST, MRS. SHEILA LODGE, THE MAYOR OF SANTA BARBARA; MR. JOHN FLYNN, VENTURA COUNTY SUPERVISOR; MR. RICHARD PARSONS, GENERAL MANAGER OF THE VENTURA PORT DISTRICT--AND I MIGHT ADD, THE CHAIRMAN THIS YEAR OF THE CALIFORNIA MARINE AFFAIRS AND NAVIGATION COUNCIL; MR. LYNN MULHARDT, CHAIRMAN OF THE UNITED WATER CONSERVATION DISTRICT BOARD OF DIRECTORS, MR. SHELDON BERGER, A DIRECTOR OF THAT BOARD, AND MR. FRED GIENTKE, THE GENERAL MANAGER.

MR. CHAIRMAN, IN THE INTEREST OF TIME, I'LL SIMPLY IDENTIFY THOSE PROJECTS WHICH WE ARE SUPPORTING HERE TODAY, AND I ASK THAT WE BE ALLOWED TO INCLUDE ADDITIONAL MATERIAL AND COMMENTS IN THE RECORD.

IN THE CITY OF SANTA BARBARA, MR. CHAIRMAN, WE SUPPORT THE ARMY CORPS OF ENGINEERS' REQUEST FOR $150,000 FOR PRE-CONSTRUCTION ENGINEERING AND DESIGN OF THE HARBOR IMPROVEMENT PROJECT; AND $2,750,000 FOR DREDGING AT THE HARBOR. ONE OF THE AIMS OF THE DESIGN STUDY, MR. CHAIRMAN, IS TO REDUCE THE NEED FOR ANNUAL DREDGING AT THE HARBOR, A POINT WHICH THE MAYOR WILL ADDRESS IN HER TESTIMONY. WE ALSO SUPPORT THE CORPS' REQUEST FOR $550,000 FOR PRECONSTRUCTION ENGINEERING AND DESIGN OF THE LOWER MISSION CREEK FLOOD CONTROL PROJECT.

IN SANTA BARBARA COUNTY, MR. CHAIRMAN, WE ARE REQUESTING $300,000 FOR PRECONSTRUCTION ENGINEERING AND DESIGN OF THE CARNEROS CREEK FLOOD CONTROL PROJECT. THIS IS A DOWNSCOPED PROJECT WHICH WILL PROVIDE PROTECTION TO THE SANTA BARBARA MUNICIPAL AIRPORT AND RELATED FACILITIES, AS WELL AS ENHANCE ENVIRONMENTAL VALUES AT THE GOLETA SLOUGH. WE ARE SEEKING REAUTHORIZATION OF THIS PROJECT IN THE WATER DEVELOPMENT BILL PENDING BEFORE THE PUBLIC WORKS COMMITTEE, AND THE CORPS INDICATES IT HAS THE CAPABILITY FOR THIS AMOUNT IN FY 91. THE CALIFORNIA WATER COMMISSION SUPPORTS THIS REQUEST. WE ALSO SUPPORT THE REQUEST FOR $122,00 FOR THE SANTA BARBARA COUNTY BEACH EROSION STUDY.

IN VENTURA COUNTY, MR. CHAIRMAN, WE SUPPORT THE REQUEST OF THE CORPS FOR $1,270,000 FOR DREDGING AT VENTURA HARBOR AND $210,000 FOR PRECONSTRUCTION ENGINEERING AND DESIGN OF THE HARBOR ENTRANCE REDESIGN. THE ENTRANCE REDESIGN, WHICH WAS APPROVED LAST MONTH BY THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS, IS DESIGNED TO REDUCE THE NEED FOR ANNUAL DREDGING OF THE ENTRANCE, WHICH EXPERIENCES SEVERE SCHOALING PROBLEMS. INCIDENTLY, AT THIS POINT, MR. CHAIRMAN, I'D LIKE TO EXPRESS MY APPRECIATION TO THE CORPS FOR RESTORING THE UPCOAST GROIN NEAR THE HARBOR, WORK WHICH WAS JUST COMPLETED.

THE VENTURA COUNTY BOARD OF SUPERVISORS AND THE CITY OF SANTA PAULA HAVE REQUESTED $200,000 TO UPDATE AND REVISE THE ECONOMIC ANALYSIS FOR THE PREVIOUSLY AUTHORIZED SANTA PAULA CREEK FLOOD CONTROL PROJECT. THE CORPS OF ENGINEERS AND THE COUNTY ARE ALSO SUPPORTING AN APPROPRIATION OF $900,000 FOR A FLOOD WARNING SYSTEM IN THE SANTA CLARA RIVER WATERSHED, SIMILAR TO A PROJECT CURRENTLY UNDERWAY ON THE WHITEWATER RIVER NEAR PALM SPRINGS. THIS PROJECT HAS THE POTENTIAL TO SAVE MANY LIVES. THE COUNTY IS ALSO REQUESTING $400,000 FOR AN UPDATE AND REVIEW OF THE ECONOMIC ANALYSIS OF THE CALLEGUAS CREEK PROJECT. ALTHOUGH THIS PROJECT IS NOT IN MY DISTRICT, FLOODING ON THE CREEK HAS INUNDATED THE POINT MUGU NAVAL BASE AND I SUPPORT THIS REQUEST.

MR. CHAIRMAN, THE PROBLEM WITH WATER IN CALIFORNIA IS ALWAYS THAT THERE IS TOO MUCH OF IT OR NOT ENOUGH OF IT. IN THAT REGARD, I SUPPORT THE BUREAU OF RECLAMATION'S REQUEST FOR $185,000 FOR OPERATIONS AND MAINTENANCE OF THE CACHUMA PROJECT IN SANTA BARBARA COUNTY, AND $280,000 FOR THE SAFETY OF DAMS PROGRAM AT BRADBURY DAM ON LAKE CACHUMA. IN ADDITION, I AM ASKING $300,000 TO ALLOW THE CORPS OF ENGINEERS TO DO A STUDY OF POSSIBLE EMERGENCY SOURCES OF WATER FOR SANTA BARBARA AND VENTURA COUNTIES. THE CORPS INDICATES IT HAS THE CAPABILITY TO DO SUCH A STUDY AND GIVEN THE SEVERE WATER EMERGENCY IN MY DISTRICT --WE ARE NOW IN OUR FOURTH YEAR OF DROUGHT--WE NEED TO EXPLORE ALL POSSIBILITIES. YOUR COMMITTEE HAS LONG SUPPORTED PROJECTS WHICH ARE NOW AN ESSENTIAL SOURCE OF WATER FOR OUR AREA, FOR WHICH WE ARE MOST GRATEFUL, AND I HOPE YOU WILL SUPPORT THIS MODEST EFFORT TO INSURE THE CONTINUED AVAILABILITY OF WATER--THE LIFEBLOOD OF OUR COMMUNITY.

THANK YOU MR. CHAIRMAN.

Mr. **Fazio**. Just in time, Howard Berman.

Mr. **Berman**. Thank you, Vic. My particular interest—and I have testified before and the subcommittee has been extremely helpful in the past on this issue—relates to Hansen Dam and the flood control work we are doing there. This is in the San Fernando Valley. It was once a fabulous recreational area, with boating, equestrian trails, and hiking. There were huge floods in 1969 and in 1980 which dumped a tremendous amount of silt and material into the lake area and into the basin and essentially ruined it. It has become an area in great disrepair.

Working back in 1986 with the Public Works Committee, we were able to get legislation authorizing that the money from the dredging of that lake be utilized for recreational purposes at Hansen Dam. In 1987, this subcommittee appropriated $200,000 of the moneys collected for the dredging for the purpose of preparing a master plan and last year appropriated additional moneys. Part of that money was sequestered and an additional $167,000 has accrued since last year's appropriation to the general fund directly from this dredging project.

I ask that you appropriate the money that had been sequestered and the additional $167,000 for continued efforts to restore this flood control basin so that it can achieve the recreational purposes for which it was planned.

There is some institutional reluctance on the part of the Army Corps to complete recreational projects unless directed by Congress to do so. The authorization provides this but I would also ask that the subcommittee add some additional language saying that the Corps continue with this project. There is another half a million dollars available of dredging materials in the Basin. So I would ask for language that requests the Corps to continue dredging and appropriate all funds to complete the development of Hansen Dam's recreational facilities.

I have copies of the authorizing language attached to my testimony.

[The statement of Hon. Howard L. Berman follows:]

STATEMENT OF
CONGRESSMAN HOWARD L. BERMAN
BEFORE THE
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
COMMITTEE ON APPROPRIATIONS

APRIL 4, 1990

Thank you, Mr. Chairman, for the opportunity to appear before the Members of the Subcommittee today to testify on behalf of an appropriation for Hansen Dam in Los Angeles County, California.

Hansen Dam, which is located in my district, has a history dating back to 1936 when, under the authorization of the Flood Control Act of 1936, the Army Corps of Engineers began the Hansen Dam Basin Project. The Corps was subsequently authorized (by the Flood Control Act of 1944) to undertake construction, as well as operation and maintenance, of public park and recreational facilities at water resource development projects. With the adoption of the legislation, the City of Los Angeles leased more than 1,400 acres of the basin from the Army Corps to pursue development of recreational facilities.

With the cooperation of the City of Los Angeles and the Army Corps, Hansen Dam became a very popular recreation center for the Northern San Fernando Valley. The lake provided boating, fishing and swimming opportunities, equestrian trails, picnic areas, and other recreational facilities. Hundreds of thousands of visitors made use of Hansen Dam's resources during its peak years, before it became nearly desolate for the past twenty years.

In 1969 and again in 1980, floods brought millions of tons of sand, gravel and silt to Hansen Dam, transforming the 130 acre lake into a swamp. With the demise of the lake, the other aspects of the park fell into disrepair.

Hansen Dam is located in an area that is accessible to many minority families and residents of middle- and low-incomes. I am committed to seeing that these residents have a viable recreation area. Moreover, more than a million potential park users all have easy access to Hansen Dam via the freeway.

When I arrived in Congress in 1983, the revitalization of Hansen Dam was one of my top priorities. In the 99th Congress, working with the Public Works Committee, I was able to include language in the Omnibus Water Resources Development Act of 1986 (signed into law as P.L. 99-662) accomplishing two important goals toward the effort to bring back Hansen Dam.

The first of these broadened the project purpose at Hansen Dam by authorizing the Army Corps to develop recreational facilities independent of flood control measures.

The second accomplishment of the legislation was to establish a source of funding for recreational projects at Hansen Dam that did not put any burden on the Federal government. To achieve this, the Secretary of the Army was authorized to contract for the removal and the sale of dredged material from Hansen Dam, with all funds received by the Secretary to be deposited in the General Fund of the Treasury. These funds would then be available for appropriation for the purpose of facilitating recreation, flood control or water conservation. A copy of this section of the legislation is attached to my testimony for your convenience.

This funding mechanism, I want to emphasize, does not require any new or additional funds from the Federal government. The funds are generated at Hansen Dam, to be spent at Hansen Dam.

In fiscal year 1989, $200,000 was appropriated from the money generated by the sand and gravel operation. These funds were used for the completion of a master plan and an environmental impact statement for a recreational lake at Hansen Dam.

Last year, the Army Corps budgeted $780,000 that had accrued from the dredging program for the continued development of the Hansen Dam project. That amount was appropriated in full by Congress.

Of that amount, $105,000 was returned to the General Fund of the Treasury as a result of Gramm-Rudman sequestration. This year, it is projected that an additional $167,000 will accrue in the General Fund from the dredging operation.

Accordingly, today I am requesting that the Subcommittee release $272,000 for the Hansen Dam recreation project.

In addition, it is clear to me that the Army Corps of Engineers needs to be reminded of the importance of continuing the Hansen Dam project and fully restoring the Hansen Dam recreation facilities in accordance with its own Master Plan.

At the time Congress passed the Hansen Dam provision as part of the Water Resources Development Act of 1986 (WRDA), the Army Corps estimated that sand and gravel removal at Hansen Dam would be completed by October of this year and entered into a contract that expires at that time. However, approximately three years of work remains to fully dredge the Hansen Dam Basin, promising approximately $500,000 in additional revenues for the project. The Water Resources Act authorizing language does not limit the duration of the dredging program, cap the fees that may be derived from it, or limit that operation to a single contract. As the author of this authorization language, it is certainly my intention that the Federal sand and gravel removal program at Hansen Dam continue until the Basin is fully excavated.

I have also been made aware of a certain institutional reluctance in the Corps to complete recreation-oriented projects unless specifically-directed by Congress to do so.

Accordingly, I am today also requesting that the Subcommittee include specific language directing the Army Corps to continue with the dredging operation and further directing the Corps to commit all appropriated funds to complete the development of Hansen Dam's recreational facilities, as authorized by Sec. 847(b) of the Water Resources Development Act of 1986.

This project is of the utmost importance to my constituents. There is a great demand for recreational facilities in the San Fernando Valley. We need to provide a safe alternative to the streets for city youth.

I thank the Chairman and the Members of the Subcommittee for this opportunity to testify. I look forward to working with you on this project.

the Shiawassee Flats unit as the Secretary determines necessary for flood control purposes.

SEC. 846. BRUNSWICK HARBOR, GEORGIA.

33 USC 534, 574 note.

The navigation project for Brunswick Harbor, Georgia, authorized by the River and Harbor Act of 1950, is modified to incorporate the Georgia Ports Authority's 30-foot-deep by 300-foot-wide by 8,000-foot-long channel in the South Brunswick River serving Colonel's Island terminal facilities.

SEC. 847. HANSEN DAM, LOS ANGELES AND SAN GABRIEL RIVERS, CALIFORNIA.

Flood control.
Contracts.

(a) The Hansen Dam project authorized as part of the flood control project for the Los Angeles and San Gabriel Rivers, California, by section 5 of the Flood Control Act approved June 22, 1936 (49 Stat. 1589), is modified to authorize the Secretary to contract for the removal and sale of dredged material from the flood control basin for Hansen Dam, Los Angeles County, California, for the purposes of facilitating flood control, recreation, and water conservation. All funds received by the Secretary from the removal and sale of such dredged material shall be deposited in the General Fund of the Treasury.

Appropriation authorization.

(b) There is authorized to be appropriated for fiscal years beginning after September 30, 1986, an amount not to exceed the amount of funds received by the Secretary from the removal and sale of dredged material under subsection (a). Amounts appropriated under this subsection shall be available to the Secretary—

(1) to construct, operate, and maintain recreational facilities at the Hansen Dam project; and

(2) to the extent consistent with other authorized project purposes, to facilitate water conservation and ground water recharge measures at the Hansen Dam project in coordination with the city of Los Angeles, California, and the Los Angeles County Flood Control District;

at full Federal expense.

SEC. 848. DUNKIRK HARBOR, NEW YORK.

42 USC 1962d-5.

Subject to section 903(a) of this Act, the project for navigation, Dunkirk Harbor, New York, authorized by section 201 of the Flood Control Act of 1965 and approved by resolution of the Committee on Public Works of the House of Representatives, dated December 15, 1970, and resolution of the Committee on Public Works of the Senate, dated June 22, 1971, is modified to authorize the Secretary to include dredging and maintenance of the eastern inner harbor of such project in accordance with such plans as the Secretary, in consultation with appropriate non-Federal interests, may develop, at a total cost of $4,600,000, with an estimated first Federal cost of $2,300,000 and an estimated first non-Federal cost of $2,300,000.

SEC. 849. KALIHI CHANNEL, HONOLULU HARBOR, HAWAII.

68 Stat. 1248.

(a) The project for navigation for Honolulu Harbor, Hawaii, authorized by section 101 of the River and Harbor Act of 1954, is modified to authorize and direct the Secretary to maintain a 23-foot project depth in the Kalihi Channel portion of such project.

(b) The consent of Congress is given to the State of Hawaii to construct, operate, and maintain a fixed-span bridge in and over the water of the Kalihi Channel, Honolulu Harbor, Hawaii.

Mr. Fazio. Thank you, Howard.

Mr. Bevill. Howard, who is buying that material?

Mr. Berman. Private contractors.

Mr. Bevill. What do they use it for?

Mr. Berman. I understand it is sold as new sand and gravel. It doesn't go to any food products.

Mr. Fazio. That is very reassuring.

Thank you, Howard.

Now my friend to the north with whom I have shared many years, Wally Herger.

Mr. Herger. Thank you for allowing me to testify in support of the 1991 funding for the Corps of Engineers and the Bureau of Reclamation programs in Northern California.

The projects are important to the effective mitigation of the fisheries and other environmental concerns on the Sacramento River system.

I strongly support the California Water Commission recommendation for $300,000 for restoration of the Sacramento River at the Glenn Clusa irrigation district.

This will complete the work begun in 1990. Because of the time-sensitive nature of the fishery problems, the commission urges completion of this project.

I would like to thank you Congressman Fazio for your cooperation and involvement in this project over the years. I fully support the commission's recommendations for $10.64 million in funding to initiate construction of a temperature control device at Shasta Dam.

In 1989, the winter-run Chinook Salmon was included as a protected species under both the California State Endangered Species Act and the Federal Endangered Species Act. The selective temperature releases from Shasta Reservoir will greatly improve environmental conditions for the endangered winter run Chinook Salmon and also the spring and fall Salmon runs.

Work on the temperature control device is well underway, and funding is needed to award contracts and initiate construction. This will ensure that the device is operational at the earliest possible time to maximize benefits to the salmon population.

Coleman National Fish Hatchery: I strongly support the commission's recommendation of an additional $3.8 million appropriation above the $1.5 million included in the President's budget request for the rehabilitation of the Coleman National Fish Hatchery.

Coleman, the only hatchery owned and operated by the U.S. Fish and Wildlife Service, was built to mitigate damage caused by the construction of the Keswick and Shasta Dams, which provided valuable water resources to California.

Although Coleman is the key to restoring and enhancing the Salmon population in the Sacramento River, it has been maintained only on a minimum basis for many years. Without effective restoration of the fishery, many California water users will likely face a threat to continued water flows in the future.

Cache Creek Basin: I strongly support the California Water Commission's recommendation that $500,000 be appropriated in fiscal year 1991 that will allow the Corps of Engineers to undertake an investigation of alternative projects to reduce flood impacts around Clear Lake.

The investigation conducted by the Corps of Engineers of the Cache Creek outlet project has determined that the project is not economically justified. The $500,000 appropriation will allow the Corps to make a reconnaissance investigation of the alternative projects for badly needed flood control in this area.

Yuba River Watershed: I strongly support the Commission's recommendation for $375,000 in appropriations for fiscal year 1991, as included in the President's budget request, for the Yuba River Watershed Project. A one-year reconnaissance-level study of alternatives for flood control and related purposes in the watershed should be completed by March 1990. The disastrous flood of 1986 and the resulting levee failure made it clear that much more information is needed to provide a solution to the problems in this area. As such, this funding is needed at this time in order to initiate the feasibility phase of the study.

Trinity River Restoration Program: I strongly support the commission's recommendation for the appropriation of $7,362,000 in fiscal year 1991 for the Trinity River Restoration Program, as included in the President's budget request.

Sacramento River Division—Central Valley Project: I fully support the commission's recommendation for $3,866,000 in fiscal year 1991 funding for the Sacramento River Division—Central Valley Project, as included in the President's budget request.

Operation and Maintenance Program—Central Valley Project: Finally I am in strong support of the $64,233,000 for the operation and maintenance program for the Central Valley Project as included in the President's budget proposal. This amount is necessary to ensure timely and cost effective repairs and replacements of delivery facilities. Any delay in funds for these badly needed facilities would likely result in deterioration that would effect the ability to deliver irrigation water. I urge the subcommittee's approval of this request.

Again, I greatly appreciate the opportunity to testify before this subcommittee.

[The statement of Hon. Wally Herger follows:]

STATEMENT OF THE HONORABLE WALLY HERGER
HOUSE APPROPRIATIONS COMMITTEE
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
APRIL 4, 1990

THANK YOU, MR. CHAIRMAN. I GREATLY APPRECIATE THE OPPORTUNITY TO TESTIFY BEFORE THE ENERGY AND WATER DEVELOPMENT APPROPRIATIONS SUBCOMMITTEE TO TESTIFY IN SUPPORT OF FISCAL YEAR 1991 FUNDING FOR THE ARMY CORPS OF ENGINEERS AND BUREAU OF RECLAMATION PROGRAMS IN THE STATE OF CALIFORNIA. I ENDORSE THE RECOMMENDATIONS OF THE CALIFORNIA WATER COMMISSION AND THE RECLAMATION BOARD FOR THOSE PROGRAMS. THERE ARE SEVERAL PROJECTS THAT ARE OF VITAL IMPORTANCE TO MY CONSTITUENTS, AND I URGE THE SUBCOMMITTEE TO APPROPRIATE THE NECESSARY FUNDING FOR EACH OF THEM.

SACRAMENTO RIVER RESTORATION

I STRONGLY SUPPORT THE CALIFORNIA WATER COMMISSION'S RECOMMENDATION FOR $300,000 IN THE CORPS OF ENGINEERS' FISCAL YEAR 1991 BUDGET FOR RESTORATION OF THE SACRAMENTO RIVER AT THE GLENN-COLUSA IRRIGATION DISTRICT. THIS FUNDING WILL ALLOW THE CORPS TO COMPLETE THE PRECONSTRUCTION ENGINEERING AND DESIGN THAT WAS BEGUN IN 1990 AND THE NECESSARY ENVIRONMENTAL DOCUMENTATION, AND THEN INITIATE CONSTRUCTION.

IT IS NECESSARY THAT THE CORPS OF ENGINEERS CONSTRUCT WORKS TO RESTORE THE ELEVATION OF THE SACRAMENTO RIVER IN THE VICINITY OF THE GCID INTAKE TO CONDITIONS EXISTING PRIOR TO THE FLOODS OF THE EARLY 1970'S. THE PROJECT IS AN ESSENTIAL STEP IN ASSURING AN

ENVIRONMENTALLY ACCEPTABLE METHOD OF PROVIDING WATER TO 140,000 ACRES OF FARMLAND AND 20,000 ACRES OF FEDERAL WATERFOWL REFUGES. IT ALSO IS CRITICAL TO THE WATER AND FISHERIES INTERESTS IN THE SACRAMENTO VALLEY, SAN FRANCISCO BAY AND SACRAMENTO-SAN JOAQUIN DELTA. BECAUSE OF THE TIME-SENSITIVE NATURE OF THE PROBLEMS, THE CALIFORNIA WATER COMMISSION URGES TIMELY COMPLETION OF THIS PROJECT.

I ESPECIALLY WOULD LIKE TO THANK CONGRESSMAN FAZIO FOR HIS COOPERATION AND INVOLVEMENT IN THIS SPECIFIC PROJECT.

SHASTA DAM TEMPERATURE CONTROL DEVICE

I STRONGLY SUPPORT THE CALIFORNIA WATER COMMISSION'S RECOMMENDATION FOR $10,640,000 IN FISCAL YEAR 1991 FUNDING TO INITIATE CONSTRUCTION OF A TEMPERATURE CONTROL DEVICE AT SHASTA DAM. IN 1989, THE WINTER RUN CHINOOK SALMON WAS INCLUDED AS A PROTECTED SPECIES UNDER BOTH THE CALIFORNIA STATE ENDANGERED SPECIES ACT AND THE FEDERAL ENDANGERED SPECIES ACT. THE SELECTIVE TEMPERATURE RELEASES FROM SHASTA RESERVOIR WILL GREATLY IMPROVE ENVIRONMENTAL CONDITIONS FOR THE ENDANGERED WINTER RUN CHINOOK SALMON AND ALSO THE SPRING AND FALL SALMON RUNS. WORK ON THE TEMPERATURE CONTROL DEVICE IS WELL UNDERWAY, AND FUNDING IS NEEDED TO AWARD CONTRACTS AND INITIATE CONSTRUCTION. THIS WILL ENSURE THAT THE DEVICE IS OPERATIONAL AT THE EARLIEST POSSIBLE TIME TO MAXIMIZE BENEFITS TO THE SALMON POPULATION.

COLEMAN NATIONAL FISH HATCHERY

I STRONGLY SUPPORT THE COMMISSION'S RECOMMENDATION OF AN ADDITIONAL $3.8 MILLION APPROPRIATION ABOVE THE $1.5 MILLION INCLUDED IN THE PRESIDENT'S BUDGET REQUEST FOR THE REHABILITATION

OF THE COLEMAN NATIONAL FISH HATCHERY. COLEMAN, THE ONLY HATCHERY OWNED AND OPERATED BY THE U.S. FISH AND WILDLIFE SERVICE, WAS BUILT TO MITIGATE DAMAGE CAUSED BY THE CONSTRUCTION OF KESWICK AND SHASTA DAMS, WHICH PROVIDE VALUABLE WATER RESOURCES TO CALIFORNIA. ALTHOUGH COLEMAN IS THE KEY TO RESTORING AND ENHANCING THE SALMON POPULATION IN THE SACRAMENTO RIVER, IT HAS BEEN MAINTAINED ONLY ON A MINIMUM BASIS FOR MANY YEARS. WITHOUT EFFECTIVE RESTORATION OF THE FISHERY, MANY CALIFORNIA WATER USERS WILL LIKELY FACE A THREAT TO CONTINUED WATER FLOWS IN THE FUTURE.

CACHE CREEK BASIN

I STRONGLY SUPPORT THE CALIFORNIA WATER COMMISSION'S RECOMMENDATION THAT $500,000 BE APPROPRIATED IN FISCAL YEAR 1991 THAT WILL ALLOW THE CORPS OF ENGINEERS TO UNDERTAKE AN INVESTIGATION OF ALTERNATIVE PROJECTS TO REDUCE FLOOD IMPACTS AROUND CLEAR LAKE. THE INVESTIGATION CONDUCTED BY THE CORPS OF THE CACHE CREEK OUTLET PROJECT HAS DETERMINED THAT THE PROJECT IS NOT ECONOMICALLY JUSTIFIED. THE $500,000 APPROPRIATION WILL ALLOW THE CORPS TO MAKE A RECONNAISSANCE INVESTIGATION OF THE ALTERNATIVE PROJECTS FOR BADLY NEEDED FLOOD CONTROL IN THIS AREA.

YUBA RIVER WATERSHED

I STRONGLY SUPPORT THE COMMISSION'S RECOMMENDATION FOR $375,000 IN APPROPRIATIONS FOR FISCAL YEAR 1991, AS INCLUDED IN THE PRESIDENT'S BUDGET REQUEST, FOR THE YUBA RIVER WATERSHED PROJECT. A ONE-YEAR RECONNAISSANCE-LEVEL STUDY OF ALTERNATIVES FOR FLOOD CONTROL AND RELATED PURPOSES IN THE WATERSHED SHOULD BE COMPLETED BY MARCH 1990. THE DISASTROUS FLOOD OF 1986 AND THE RESULTING LEVEE FAILURE MADE IT CLEAR THAT MUCH MORE INFORMATION

IS NEEDED TO PROVIDE A SOLUTION TO THE PROBLEMS IN THIS AREA. AS SUCH, THIS FUNDING IS NEEDED AT THIS TIME IN ORDER TO INITIATE THE FEASIBILITY PHASE OF THE STUDY.

TRINITY RIVER RESTORATION PROGRAM

I STRONGLY SUPPORT THE COMMISSION'S RECOMMENDATION FOR THE APPROPRIATION OF $7,362,000 IN FISCAL YEAR 1991 FOR THE TRINITY RIVER RESTORATION PROGRAM, AS INCLUDED IN THE PRESIDENT'S BUDGET REQUEST.

SACRAMENTO RIVER DIVISION - CENTRAL VALLEY PROJECT

I FULLY SUPPORT THE COMMISSION'S RECOMMENDATION FOR $3,866,000 IN FISCAL YEAR 1991 FUNDING FOR THE SACRAMENTO RIVER DIVISION - CENTRAL VALLEY PROJECT, AS INCLUDED IN THE PRESIDENT'S BUDGET REQUEST.

OPERATION AND MAINTENANCE PROGRAM - CENTRAL VALLEY PROJECT

FINALLY, I AM IN STRONG SUPPORT OF THE $64,233,000 FOR THE OPERATION AND MAINTENANCE PROGRAM FOR THE CENTRAL VALLEY PROJECT AS INCLUDED IN THE PRESIDENT'S BUDGET PROPOSAL. THIS AMOUNT IS NECESSARY TO ENSURE TIMELY AND COST EFFECTIVE REPAIRS AND REPLACEMENTS OF DELIVERY FACILITIES. ANY DELAY IN FUNDED FOR THESE BADLY NEEDED FACILITIES WOULD LIKELY RESULT IN DETERIORATION THAT WOULD EFFECT THE ABILITY TO DELIVER IRRIGATION WATER. I URGE THE SUBCOMMITTEE'S APPROVAL_OF THIS REQUEST.

AGAIN, I GREATLY APPRECIATE THE OPPORTUNITY TO TESTIFY BEFORE THIS THIS SUBCOMMITTEE.

Mr. FAZIO. I know I will be in touch with the Interior Committee on the Coleman Project, because they are trying to establish another Fish and Wildlife service budget.

I am sorry to wait so long to introduce the Chairman of the Public Works Committee, one of the most important authorizers for us, Chairman Glenn Anderson.

Mrs. Boggs indicated her disappointment that she could not be here. She had to go back to the HUD Subcommittee.

Mr. Myers is off to the Ethics Committee, but they wanted to join in welcoming you to the committee.

Mr. ANDERSON. Thank you, Mr. Chairman.

I am glad to see you here this morning to discuss the fiscal year 1991 Energy and Water Development Bill with you. It is a pleasure to work with you and the entire subcommittee.

The work of this subcommittee, with your leadership, Mr. Chairman, has provided great benefits for California and the entire nation.

I know you face a very difficult task every year to satisfy many requests with the limited funds and allocation ceilings you are given. Very few, if any, get everything that is requested but your decisions have always been considered fair and knowledgeable.

I also should point out how well you and the Members of the subcommittee have worked with the Committee on Public Works and Transportation over the years. Now that we have resumed our cycle of water resources development authorizing legislation every two years, our working relationship should be even better.

As long as there is no disagreement with what I have said so far, I will move on to some specifics. As you know, Mr. Chairman, I am appearing here on behalf of several vitally needed water resources projects in Southern California.

We in Southern California are coping with the water resources needs of the population that is expected to grow by one-third to 18 million people in the next decade. That is a lot of people, resulting in more commerce and the movement of goods, and a greater need for flood control and beach erosion projects.

The expansion of the Ports of Los Angeles and Long Beach as proposed in the 2020 Plan is of vital importance to Southern California and a much wider region. The area's economy is projected to grow by 3 percent annually with a heavy emphasis on international trade expansion. The Ports are already the largest container ports in the nation and we must prepare for the trade growth of the 21st Century.

A feasibility study on the 2020 Plan is projected for completion during fiscal year 1991. The Corps of Engineers will need $250,000 for that study and an additional $3 million to begin preliminary engineering and design during the year. Mr. Chairman, it has been four years since the enactment of the conditional authorization for this project.

I believe that for a project of this importance to such a wide area that it is time to get moving on construction.

In addition, $760,000 is needed for the fifth year of the Harbor-Hydraulic Model operated by the Corps of Engineers in Vicksburg, Mississippi. This project is crucial to the port expansion project at San Pedro Bay.

Another important project for the area is the Los Angeles County Drainage Area (LACDA) flood control project. The existing LACDA project has become outdated because of the growth of the area and improved technology.

The population in the basin has increased from 2.8 million to 7.7 million in the last decade and potential damages from a 100-year flood are estimated at $2.25 billion. The Corps of Engineers will be ready for an additional $2 million for preliminary engineering and design this year.

This subcommittee has provided important support for the port expansion and flood control projects in the past.

Speaking for the residents of Southern California, we greatly appreciate your help.

I also hope the committee will give consideration to these other projects in the area:

$500,000 is needed for continued investigation of coastline stabilization of the Rancho Palos Verdes Landslide

$142,000 is needed to begin the feasibility study on the Santa Monica Breakwater to protect the waterfront and other municipal assets

$2 million is needed in O&M funds to remove dredged spoils from the federal channel of the Santa Barbara West Beach.

For Ventura Harbor, $1.27 million is needed for maintenance dredging to keep the harbor open year-round and $210,000 is needed for preliminary engineering and design of an improved harbor entrance.

$4.35 million is needed for construction of the King Harbor Breakwater in Redondo Beach. This project can be completed in one year with the full appropriation which would minimize the possibility of destruction from storms that has taken place at King Harbor before.

$1.7 million is needed in O&M funds to continue dredging of the Marina Del Rey small craft harbor.

$2.7 million is required for construction of the experimental sand bypass at Oceanside and $252,000 is needed for preliminary engineering and design and $65,000 for O&M for Oceanside Harbor.

$400,000 is needed for the cost of monitoring and analysis of shoreline changes in Los Angeles and Orange Counties as part of the California Storm and Tidal Wave Study.

One final, and very large request, is the $65 million for construction of the Santa Ana River Mainstem Flood Control Project. While this is a large sum, it is needed to construct a comprehensive flood control project to protect the 2 million residents of the Santa Ana Basin.

Mr. Chairman, I thank you for the opportunity to testify here today and I will be happy to answer any questions.

Most of the projects are not in my district. They are in other Congressmen's areas.

[The statement of Hon. Glenn M. Anderson follows:]

STATEMENT OF REP. GLENN M. ANDERSON
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT APPROPRIATIONS
APRIL 4, 1990

MR. CHAIRMAN, I AM GLAD TO BE HERE AGAIN THIS YEAR TO DISCUSS THE FISCAL YEAR 1991 ENERGY AND WATER DEVELOPMENT APPROPRIATIONS BILL WITH YOU. IT IS ALWAYS A PLEASURE TO WORK WITH YOU AND THE ENTIRE SUBCOMMITTEE.

THE WORK OF THIS SUBCOMMITTEE, WITH YOUR LEADERSHIP, MR. CHAIRMAN, HAS PROVIDED GREAT BENEFITS FOR CALIFORNIA AND THE ENTIRE NATION. I KNOW YOU FACE A VERY DIFFICULT TASK EVERY YEAR TO SATISFY MANY REQUESTS WITH THE LIMITED FUNDS AND ALLOCATION CEILINGS YOU ARE GIVEN. VERY FEW, IF ANY, GET EVERYTHING THAT IS REQUESTED BUT YOUR DECISIONS HAVE ALWAYS BEEN CONSIDERED FAIR AND KNOWLEDGEABLE.

I ALSO SHOULD POINT OUT HOW WELL YOU AND THE MEMBERS OF THE SUBCOMMITTEE HAVE WORKED WITH THE COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION OVER THE YEARS. NOW THAT WE HAVE RESUMED OUR CYCLE OF WATER RESOURCES DEVELOPMENT AUTHORIZING LEGISLATION EVERY TWO YEARS, OUR WORKING RELATIONSHIP SHOULD BE EVEN BETTER.

AS LONG AS THERE'S NO DISAGREEMENT WITH WHAT I'VE SAID SO FAR, I'LL MOVE ON TO SOME SPECIFICS. AS YOU KNOW, MR. CHAIRMAN, I'M APPEARING HERE ON BEHALF OF SEVERAL VITALLY NEEDED WATER RESOURCES PROJECTS IN SOUTHERN CALIFORNIA.

WE IN SOUTHERN CALIFORNIA ARE COPING WITH THE WATER RESOURCES NEEDS OF A POPULATION THAT IS EXPECTED TO GROW BY ONE-THIRD TO 18 MILLION PEOPLE IN THE NEXT DECADE. THAT IS A LOT OF PEOPLE, RESULTING IN MORE COMMERCE AND THE MOVEMENT OF GOODS, AND A GREATER NEED FOR FLOOD CONTROL AND BEACH EROSION PROJECTS.

THE EXPANSION OF THE PORTS OF LOS ANGELES AND LONG BEACH AS PROPOSED IN THE 2020 PLAN IS OF VITAL IMPORTANCE TO SOUTHERN CALIFORNIA AND A MUCH WIDER REGION. THE AREA'S ECONOMY IS PROJECTED TO GROW BY 3 PER CENT ANNUALLY WITH A HEAVY EMPHASIS ON INTERNATIONAL TRADE EXPANSION. THE PORTS ARE ALREADY THE LARGEST CONTAINER PORTS IN THE NATION AND WE MUST PREPARE FOR THE TRADE GROWTH OF THE 21ST CENTURY.

A FEASIBILITY STUDY ON THE 2020 PLAN IS PROJECTED FOR COMPLETION DURING FISCAL YEAR 1991. THE CORPS OF ENGINEERS WILL NEED $250,000 FOR THAT STUDY AND AN ADDITIONAL $3 MILLION TO BEGIN PRELIMINARY ENGINEERING AND DESIGN DURING THE YEAR. MR. CHAIRMAN, IT HAS BEEN FOUR YEARS SINCE THE ENACTMENT OF THE CONDITIONAL AUTHORIZATION FOR THIS PROJECT. I BELIEVE THAT FOR A PROJECT OF THIS IMPORTANCE TO SUCH A WIDE AREA THAT IT IS TIME TO GET MOVING ON CONSTRUCTION.

IN ADDITION, $760,000 IS NEEDED FOR THE FIFTH YEAR OF THE HARBOR-HYDRAULIC MODEL OPERATED BY THE CORPS OF ENGINEERS IN VICKSBURG, MISS. THIS PROJECT IS CRUCIAL TO THE PORT EXPANSION PROJECT IN SAN PEDRO BAY.

ANOTHER IMPORTANT PROJECT FOR THE AREA IS THE LOS ANGELES COUNTY DRAINAGE AREA (LACDA) FLOOD CONTROL PROJECT. THE EXISTING LACDA PROJECT HAS BECOME OUTDATED BECAUSE OF THE GROWTH OF THE AREA AND IMPROVED TECHNOLOGY. THE POPULATION IN THE BASIN HAS INCREASED FROM 2.8 MILLION TO 7.7 MILLION IN THE LAST DECADE AND POTENTIAL DAMAGES FROM A 100-YEAR FLOOD ARE ESTIMATED AT $2.25 BILLION. THE CORPS OF ENGINEERS WILL BE READY FOR AN ADDITIONAL $2 MILLION FOR PRELIMINARY ENGINEERING AND DESIGN THIS YEAR.

THIS SUBCOMMITTEE HAS PROVIDED IMPORTANT SUPPORT FOR THE PORT EXPANSION AND FLOOD CONTROL PROJECTS IN THE PAST. SPEAKING FOR THE RESIDENTS OF SOUTHERN CALIFORNIA, WE GREATLY APPRECIATE YOUR HELP.

I ALSO HOPE THE COMMITTEE WILL GIVE CONSIDERATION TO THESE OTHER PROJECTS IN THE AREA:

* $500,000 IS NEEDED FOR A CONTINUED INVESTIGATION OF COASTLINE STABILIZATION OF THE RANCHO PALOS VERDES LANDSLIDE;

* $142,000 IS NEEDED TO BEGIN THE FEASIBILITY STUDY ON THE SANTA MONICA BREAKWATER TO PROTECT THE WATERFRONT AND OTHER MUNICIPAL ASSETS;

* $2 MILLION IS NEEDED IN O&M FUNDS TO REMOVE DREDGED SPOILS FROM THE FEDERAL CHANNEL OF THE SANTA BARBARA WEST RIVER;

* FOR VENTURA HARBOR, $1.27 MILLION IS NECESSARY FOR MAINTENANCE DREDGING TO KEEP THE HARBOR OPEN YEAR-ROUND AND $210,000 IS NEEDED FOR PRELIMINARY ENGINEERING AND DESIGN OF AN IMPROVED HARBOR ENTRANCE;

* $4.35 MILLION IS NEEDED FOR CONSTRUCTION OF THE KING HARBOR BREAKWATERS IN REDONDO BEACH. THIS PROJECT CAN BE COMPLETED IN ONE YEAR WITH THE FULL APPROPRIATION WHICH WOULD MINIMIZE THE POSSIBILITY OF THE DESTRUCTION FROM STORMS THAT HAS TAKEN PLACE AT KING HARBOR BEFORE;

* 1.7 MILLION IS NEEDED IN O&M FUNDS TO CONTINUE DREDGING OF THE MARINA DEL REY SMALL CRAFT HARBOR;

* $2.7 MILLION IS REQUIRED FOR CONSTRUCTION OF THE EXPERIMENTAL SAND BYPASS AT OCEANSIDE AND $252,000 IS NEEDED FOR PRELIMINARY ENGINEERING AND DESIGN AND $65,000 FOR O&M FOR OCEANSIDE HARBOR;

* $400,000 IS NEEDED FOR HALF THE COST OF MONITORING AND ANALYSIS OF SHORELINE CHANGES IN L.A. AND ORANGE COUNTIES AS PART OF THE CALIFORNIA STORM AND TIDAL WAVES STUDY;

* ONE FINAL, AND VERY LARGE REQUEST, IS THE $65 MILLION FOR CONSTRUCTION OF THE SANTA ANA RIVER MAINSTEM FLOOD CONTROL PROJECT. WHILE THIS IS A LARGE SUM, IT IS NEEDED TO CONSTRUCT A COMPREHENSIVE FLOOD CONTROL PROJECT TO PROTECT THE 2 MILLION RESIDENTS OF THE SANTA ANA BASIN.

MR. CHAIRMAN, I THANK YOU FOR THE OPPORTUNITY TO TESTIFY HERE TODAY AND I WILL BE HAPPY TO ANSWER ANY QUESTIONS.

Mr. Fazio. We appreciate that, Glenn.

We know you cut a pretty broad swath across the land there.

Mr. Bevill. I think he already has his district covered with projects.

Mr. Fazio. They are already in the President 's budget.

Thank you.

The next person I would like to bring up is another important authorizer for us, the Chairman of the Water and Power Subcommittee, George Miller.

Mr. Miller. Thank you, Mr. Chairman, Members of the committee, and in particular thank you for giving our delegation this time today.

I will try to be brief.

Once again I appear before this Committee to ask for continued funding on programs that you have helped support over the last several years.

The Walnut Creek Flood Control Project will need $4.8 million to continue its ongoing construction work. This funding will be used to complete a major portion of the San Ramon Creek Bypass Project, the final link in a long effort to reduce local flooding that began in the 1960s.

I should note that because of this project's success, the cities of Concord, Pleasant Hill and Walnut Creek have been able to grow into prosperous communities with a minimal threat of flooding.

And the Walnut Creek Basin general investigation, which you have funded for the past several years, will require $150,000 for fiscal year 1991. This is $65,000 above the President's request. However, local officials have identified this supplemental amount as necessary to sustain the great progress that has been made on the studies, progress that has generated great community support.

In addition, the Wildcat-San Pablo Creek Flood Control Project, which has been proceeding in construction, requires another $1.7 million under its existing authorization. This project stands as a model for community participation in the reshaping of a once controversial project into one that enjoys substantial support throughout the community.

Its completion will allow the further economic development of the North Richmond community, which was flooded nine times in the period 1982–1984.

I am also requesting $962,000 in funding for further studies and design work for the Port of Richmond. I would like to recognize Mayor George Livingston of the Port of Richmond accompanied by Mike Powers from the City of Richmond. They will discuss in detail the City of Richmond and the need for the port and for this Committee's assistance. Also John DeVito, who you have known as the long-time manager of the Contra Costa County Water District, is here. John has since retired.

I am told that serious progress on the channel project redesign is taking place, and on that basis, it is important that funds be included for fiscal year 1991. Providing the minimal funding I have suggested will keep moving forward a project that could have dramatic impacts on the revitalization of the economy of West Contra Costa County.

In addition, by including the funding in the fiscal year 1991 bill, you will assure the continued expenditure of fiscal year 1990 appropriated funds that otherwise could be jeopardized. I anticipate a serious reexamination of the project next year, after studies have been completed and the financing and pollution issues have been satisfactorily resolved.

There are several other projects that benefit not only my own district, but the Bay Area in general, and I would hope that you will continue to fund this important work.

These include the Corps' share of Sacramento-San Joaquin Delta Investigations, the Bureau of Reclamation's Delta Support Studies and Suisun Marsh Preservation Agreement, and offstream storage studies consistent with federal Delta, bay and water quality obligations as established under P.L. 99-546, among other statutes.

The economic and environmental viability of the San Francisco Bay area is in a state of crisis due to unending delays in designating a long-term disposal site for dredge spoils. Frankly, I share the frustration of many of my regional colleagues with the slow pace and multiple delays which have deferred selection of an environmentally safe and economical disposal site, as detailed in a Government Accounting Office study released several months ago.

I understand that agreement was reached last week by federal and state agencies on the management structure for the Long-Term Management Strategy (LTMS) and support for cost-sharing by the State of California.

I strongly urge this Subcommittee to ensure that the LTMS program is fully funded so that the process of selecting a long-term disposal site for dredged material can begin.

After years of delays, Interior Secretary Manuel Lujan last year ordered the Bureau of Reclamation to prepare a full environmental impact statement (EIS) on the operation of Glen Canyon Dam. Studies have clearly demonstrated that this huge dam on the Colorado River causes extensive natural resource damage downstream in Grand Canyon National Park.

This will be one of the most important environmental impact statements ever prepared by the Interior Department.

I do not believe they should limit the scope of the environmental statement in a manner that would exclude consideration of alternatives to current power production practices at Glen Canyon Dam.

I therefore urge the Subcommittee to use report language to direct the Bureau to integrate the Glen Canyon EIS with the EIS being prepared by the Western Area Power Administration on its Post-1989 Power Marketing Criteria.

Only by integrating these two critical documents can we be assured that all alternatives to the currently destructive power production practices at Glen Canyon Dam will be considered.

Despite the 1986 congressional reformulation of Garrison, the project continues to face serious problems. Because of cost allocation irregularities discovered by the Inspector General, it now appears that irrigation development may be economically infeasible. The Inspector General's findings were apparently a major factor in the Administration's decision not to seek funding for Garrison in fiscal year 1991.

Should funds be made available for this project, I would urge the Subcommittee to restate the language included in last year's bill. This will ensure that work on the project proceeds only in accordance with the 1986 Reformulation Act.

Because of modifications made to the design of the Buffalo Bill Dam Project in Wyoming, the currently authorized appropriation ceiling is not sufficient to complete the project. The Bureau of Reclamation has advised the committee that the total cost of the project has increased by $17 million.

In 1989, the State of Wyoming approved $5 million in cost sharing for these modifications. A $12 million increase in the federal share is thus required to complete the project with the new modifications.

The Committee on Interior and Insular Affairs included the required authority to increase the cost ceiling when it reported H.R. 2567 last fall. That bill is now pending before the Rules Committee.

I am confident that when a rule is granted, the bill will promptly move towards passage on the House Floor, and it will not be necessary for this subcommittee to take any action on this matter.

Legislation was enacted in the 100th Congress to authorize an interim cost ceiling increase of approximately $45 million for the Central Utah Project (CUP). In order to complete the entire project, an additional ceiling increase will be required prior to the fiscal year 1992 appropriations cycle.

The Utah delegation reached agreement on a comprehensive reauthorization bill for this project earlier this year. My subcommittee held a hearing on that legislation (H.R. 3960) in February.

The bill would make substantial modifications to the project and authorize a substantial increase in the cost ceiling.

I am confident that ongoing discussions among the Utah Delegation and other interested parties will lead to enactment of a comprehensive CUP bill in the near future.

Last year's bill included important language to prohibit the Secretary of the Interior from executing any new, long-term water supply contracts from the Central Valley Project prior to October 1, 1990.

The intent of this provision was to prevent all the remaining yield of that project from being sold on a long-term basis before all the necessary studies and analyses are completed.

These include: The State's review of water quality standards; reviews of irrigation drainage problems; and, congressional review of the so-called 10(h) water transportation contract with the State of California, as required by federal law.

These issues remain unresolved. I would urge the Subcommittee to continue the restrictions on CVP water sales through the end of fiscal year 1991.

As the Subcommittee knows, construction and operation of the Central Valley Project in California has had devastating effects on fish and wildlife resources.

There are continuing problems in delivering sufficient water supplies to wildlife refuges, and the salmon runs in the Sacramento River have all but disappeared.

Because of the severity of this problem, I will soon introduce comprehensive legislation to restore the fish and wildlife resources of the Central Valley.

I look forward to working with Members of the Subcommittee as we seek effective and equitable solutions to this problem.

I look forward to the support of this Committee and appreciate the hard work of the Members and the staff to make our dreams come true, especially Hunter, he has been so helpful.

Mr. FAZIO. I am sure Nancy Pelosi and I join with you in expressing concern for the progress on the Bay problem.

[The statement of Hon. George Miller follows:]

Statement of
CONGRESSMAN GEORGE MILLER
7th District - California
Subcommittee on Energy and Water
House Appropriations Committee
April 4, 1990

Mr. Chairman and Members of the Subcommittee, it is again a pleasure to come before you to discuss several of the very important projects in the 7th Congressional District of California.

As Chairman of the Subcommittee on Water, Power and Offshore Energy Resources, which authorizes many of the appropriations approved by this Subcommittee, I want to reiterate my pleasure at working cooperatively with the Chairman and Members of this Subcommittee over the past five years. I very much look forward to continuing that productive relationship for many years to come.

Projects for 7th Congressional District

Mr. Chairman, once again I am requesting that this Subcommittee continue funding of several projects for the 7th Congressional District that you have regularly supported. These are sound, economical projects that meet the strict criteria established by federal law, and they deserve your continued support.

The Walnut Creek flood control project will need $4.8 million to continue its ongoing construction work. This funding will be used to complete a major portion of the San Ramon Creek Bypass Project, the final link in a long effort to reduce local flooding that began in the 1960s. I should note that because of this project's success, the cities of Concord, Pleasant Hill and Walnut Creek have been able to grow into prosperous communities with a minimal threat of flooding.

And the Walnut Creek Basin general investigation, which you have funded for the past several years, will require $150,000 for FY91. This is $65,000 above the President's request. However, local officials have identified this supplemental amount as necessary to sustain the great progress that has been made on the studies, progress that has generated great community support.

In addition, the Wildcat-San Pablo Creek flood control project, which has been proceeding in construction, requires another $1.7 million under its existing authorization. This project stands as a model for community participation in the reshaping of a once controversial project into one that enjoys substantial support throughout the community. Its completion will allow the further economic development of the North Richmond community, which was flooded nine times in the period 1982-1984.

I am also requesting $962,000 in funding for further studied and design work for the Port of Richmond. I understand that representatives of the Port and the City of Richmond, whose distinguished Mayor, George Livingston, is here today, have been working with the Corps of Engineers on the redesign of the channel deepening project. Over the course of the next year, design work, determinations on disposal of dredge spoils, and resolution of some past pollution problems are of highest priority, and are expected to be resolved. In addition, consultations with corporate residents of the newly created assessment district will determine local willingness to participate in the project and meet local cost sharing responsibilities.

I am told that serious progress on the channel project redesign is taking place, and on that basis, it is important that funds be included for FY91. Providing the minimal funding I have suggested will keep moving forward a project that could have dramatic impacts on the revitalization of the economy of West Contra Costa County. In addition, by including the funding in the FY91 bill, you will assure the continued expenditure of FY90 appropriated funds that otherwise could be jeopardized. I anticipate a serious re-examination of the project next year, after studies have been completed and the financing and pollution issues have been satisfactorily resolved.

There are several other projects that benefit not only my own district, but the Bay Area in general, and I would hope that you will continue to fund this important work. These include the Corps' share of Sacramento-San Joaquin Delta Investigations, the Bureau of Reclamation's Delta Support Studies and Suisun Marsh Preservation Agreement, and offstream storage studies consistent with federal Delta, Bay and water quality obligations as established under P.L. 99-546, among other statutes.

Long-Term Management Strategy

The economic and environmental viability of the San Francisco Bay Area is in a state of crisis due to unending delays in designating a long-term disposal site for dredge spoils. Frankly, I share the frustration of many of my regional colleagues with the slow pace and multiple delays which have deferred selection of an environmentally safe and economical disposal site, as detailed in a General Accounting Office study released several months ago. I understand that agreement was reached last week by federal and state agencies on the management structure for the Long-Term Management Strategy (LTMS) and support for cost-sharing by the State of California. I strong urge this Subcommittee to ensure that the LTMS program is fully funded so that the process of selecting a long-term disposal site for dredged material can begin.

Short-Term Dredged Material Disposal

The delay of the LTMS process for another four years has created a critical situation for Bay Area dredging projects that cannot wait for selection of a long-term site. I urge the Subcommittee to direct the Corps of Engineers to cooperate with local agencies and jurisdictions to locate acceptable short-term disposal sites for these projects.

Bureau of Reclamation

Mr. Chairman, there are several issues affecting programs of the Bureau of Reclamation that I would like to mention at this time.

Prohibition on Studying Terminus for San Luis Drain

For many years, this Subcommittee and the Congress have barred the Bureau of Reclamation from using any funds to study or to construct the San Luis Drain or any other mechanism which would transport agricultural wastewater from the Central Valley to the Sacramento-San Joaquin Delta. Although the cleanup of Kesterson Reservoir is now essentially complete and the subsurface drains in the Westlands Water District are still plugged, the San Luis Drain represents a continuing threat to water quality in the Sacramento-San Joaquin Delta and San Francisco Bay. The restrictions on the Drain must be re-stated in this year's legislation.

Glen Canyon Dam Environmental Impact Statement

After years of delays, Interior Secretary Manuel Lujan last year ordered the Bureau of Reclamation to prepare a full environmental impact statement (EIS) on the operation of Glen Canyon Dam. Studies have clearly demonstrated that this huge dam on the Colorado River causes extensive natural resource damage downstream in Grand Canyon National Park.

This will be one of the most important environmental impact statements ever prepared by the Interior Department. I do not believe they should limit the scope of the environmental statement in a manner that would exclude consideration of alternatives to current power production practices at Glen Canyon Dam.

I therefore urge the Subcommittee to use report language to direct the Bureau to integrate the Glen Canyon EIS with the EIS being prepared by the Western Area Power Administration on its Post-1989 Power Marketing Criteria. Only by integrating these two critical documents can we be assured that all alternatives to the currently destructive power production practices at Glen Canyon Dam will be considered.

Garrison Diversion Unit

Despite the 1986 Congressional reformulation of Garrison, the project continues to face serious problems. Because of cost allocation irregularities discovered by the Inspector General, it now appears that irrigation development may be economically infeasible. The Inspector General's findings were apparently a major factor in the Administration's decision not to seek funding for Garrison in FY 1991.

Should funds be made available for this project, I would urge the Subcommittee to re-state the language included in last year's bill. This will ensure that work on the project proceeds only in accordance with the 1986 reformulation act.

Buffalo Bill Dam Cost Ceiling

Because of modifications made to the design of the Buffalo Bill Dam Project in Wyoming, the currently authorized appropriation ceiling is not sufficient to complete the project. The Bureau of Reclamation has advised the Committee that the total cost of the project has increased by $17 million. In 1989, the State of Wyoming approved $5 million in cost sharing for these modifications in 1989. A $12 million increase in the Federal share is thus required to complete the project with the new modifications.

The Committee on Interior and Insular Affairs included the required authority to increase the cost ceiling when it reported H.R. 2567 last fall. That bill is now pending before the Rules Committee. I am confident that when a rule is granted, the bill will promptly move towards passage on the House floor and it will not be necessary for this Subcommittee to take any action on this matter.

Central Utah Project

Legislation was enacted in the 100th Congress to authorize an interim cost ceiling increase of approximately $45 million for the Central Utah Project (CUP). In order to complete the entire project, an additional ceiling increase will be required prior to the FY 1992 appropriations cycle.

The Utah delegation reached agreement on a comprehensive reauthorization bill for this project earlier this year. My Subcommittee held a hearing on that legislation (H.R. 3960) in February. The bill would make substantial modifications to the project and authorize a substantial increase in the cost ceiling.

I am confident that ongoing discussions among the Utah delegation and other interested parties will lead to enactment of a comprehensive CUP bill in the near future.

Water Marketing Moratorium

Last year's bill included important language to prohibit the Secretary of the Interior from executing any new, long-term water supply contracts from the Central Valley Project prior to October 1, 1990. The intent of this provision was to prevent all the remaining yield of that Project from being sold on a long-term basis before all the necessary studies and analyses are completed. These include: the State's review of water quality standards; reviews of irrigation drainage problems; and, Congressional review of the so-called 10(h) water transportation contract with the State of California, as required by federal law.

These issues remain unresolved. I would urge the Subcommittee to continue the restrictions on CVP water sales through the end of FY 1991.

Central Valley Project Fish and Wildlife

As the Subcommittee knows, construction and operation of the Central Valley Project in California has had devastating effects on fish and wildlife resources. There are continuing problems in delivering sufficient water supplies to wildlife refuges, and the salmon runs in the Sacramento River have all but disappeared.

Because of the severity of this problem, I will soon introduce comprehensive legislation to restore the fish and wildlife resources of the Central Valley. I look forward to working with Members of this Subcommittee as we seek effective and equitable solutions to this problem.

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Mr. FAZIO. Next, Ron Packard.

Mr. PACKARD. Thank you, Mr. Chairman, and thank you, Mr. Fazio.

We do appreciate, Mr. Chairman, your friendliness to California and the very much needed water projects that you have supported over the many years. We are very, very grateful to you.

I would like to introduce just two individuals that have not already been introduced. The Mayor of Oceanside will testify before you, I believe, later on today, Larry Bagley is here; and also from Orange County, the Board of Supervisors, Mr. Gaddi Vasquez will, I think, be testifying before you, also.

I would like to simply briefly refer to five projects, some of which have been mentioned, but most of which have not.

In Oceanside, you have supported and funded the Experimental Sand Bypass Project over the years. That is in its last phase now. It's operating and very successfully, operating and moving sand out of the harbor onto the much needed beaches.

And there is one phase yet to go, and that was not included in the President's budget. And we certainly feel that it must be included to complete that project, $2.7 million.

It would be a shame to have such a successful project not go to completion. So we hope that you will give serious consideration to complete that last phase.

For Oceanside Harbor, we are simply asking for $175,000, plus an additional $82,000. There is a dangerous breakwater in the harbor of Oceanside that has caused 13 deaths over the years. Many, many accidents, about $9 million in damage, and it's not a lot of money to correct a very, very much needed problem.

The San Luis Rey River Flood Control Project, that is included in the President's budget. It's vital to the protection of 4,000 plus homes, a hundred businesses in one of the valleys of the City of Oceanside; $5.5 million is essential there.

I would like to add my support to the many that have already spoken to the Santa Ana River Mainstream Flood Control Project. Sixty-five million dollars has been requested by the President.

We hope that this committee will support that. That is an ongoing project that must be completed.

And the last is not in my area, but certainly important. It's a reclamation water system in the Eastern Municipal Water District. They are requesting two million, and I certainly would like to add my support to that much needed project.

Thank you, Mr. Chairman.

[The statement of Hon. Ron Packard follows:]

STATEMENT FOR THE
HONORABLE RON PACKARD
REPRESENTING THE 43RD DISTRICT OF CALIFORNIA
BEFORE THE SUBCOMMITTEE ON ENERGY & WATER
DEVELOPMENT APPROPRIATIONS
APRIL 4, 1990

OCEANSIDE EXPERIMENTAL SAND BYPASS SYSTEM

Mr. Chairman, the first phase of the Oceanside Experimental Sand Bypass system is operating with great success. However, the Administration's budget request does not include funding to continue the project. I ask that the Subcommittee appropriate $2.7 million to ensure the completion of this innovative technology that will reduce the cost of dredging Oceanside Harbor and replenish the eroding beaches.

For fiscal year 1990, Congress committed over $2.6 million for this project. However, the Corps has allocated only $1.8 million. This marks the second year that the Administration has not requested funding. This project that will ultimately save the federal government money, that enjoys broad support throughout north San Diego County, and that has already received more than $12 million in study, design and operation funds. I cannot understand any degree of hesitancy to construct the remaining phases of the project. The technology works, and the full benefit of the technology can be realized only after installation of the fluidizers to move sand toward the underwater pumps where it can then be pumped past the harbor and onto the beach.

Mr. Chairman, I appreciate this Subcommittee's commitment to the sand bypass project and urge you to continue your support this year.

OCEANSIDE HARBOR

The Board of Engineers for Rivers and Harbors recently approved improvements to the Oceanside Harbor breakwaters. I urge the Subcommittee to approve the budget request of $175,000 and add $82,000 to complete all preconstruction work on this project. These improvements are necessary to improve navigation safety and reduce storm surge in the harbor. Over the past years, 13 people have died in boating accidents near the mouth of the harbor and more than $9 million of storm damage has occurred to facilities inside the harbor.

SAN LUIS REY RIVER

The Administration's budget includes $5.5 million for construction of the San Luis Rey River flood control project. This will be the third year of construction funding for this vital project that protects more than 4,000 homes and 100 businesses in this rapidly growing area of my district. I understand some modifications to the project are being considered. However, the $5.5 million will continue work on portions of the project unaffected by these potential modifications.

SANTA ANA RIVERFLOOD PROJECT

The Administration's budget request includes $65 million for construction of the Santa Ana Riverflood Project. This project is vital and will protect against significant costs due to flooding. I wholeheartedly support the Administration's request and ask that the Subcommittee appropriate the $65 million requested on FY 91 for this vital project.

EASTERN MUNICIPAL WATER DISTRICT RECLAIMED WATER SYSTEM PROJECT

Eastern Municipal Water District is the local sponsor of the Bureau of Reclamation Project. This project will provide for a new concept in water management which will result in significant water conservation. The Eastern Municipal Water district, is faced with the fourth year of subnormal (drought) conditions which are rapidly depleting the District's groundwater supplies.

The project will put in place the Main Transmission system and appurtenant works necessary for a secondary water supply system, which will (1) reduce the demands on the District groundwater supply; (2) provide for extended agricultural production; and (3) provide environmental enhancement creating wetlands for the migratory birds of the Pacific Flyway.

The Fiscal Year 1990 budget does not include funding for this project as part of the BUREC Programs. I respectfully request a write-in appropriation of $2 million in the 1990-1991 Energy and Water Appropriations bill.

Mr. FAZIO. Thank you, Ron.

And now I would like to go to our good friend from the Rules Committee who has been helpful to us there, Tony Beilenson.

Mr. BEILENSON. I appreciate very much the opportunity to testify. I have nobody to introduce. You don't have to listen to anybody else later. I am the only one who is going to testify on these particular projects.

I am here to ask for funding for additional recreation development in the Sepulveda Flood Control Basin in the San Fernando Valley of Los Angeles.

If I may, Mr. Chairman, I will summarize my request and submit my statement for the record.

We greatly appreciate your support and the funding that you provided in the past for this project, a total of $10 million provided back in 1985 and 1987, which enabled the Corps of Engineers to develop 160 acre park with a 26 acre recreation lake, as well as a 60 acre wildlife reserve.

Both of them have turned out enormously well and are a great asset to the heavily populated and congested San Fernando Valley.

The wildlife reserve opened up a little less than two months ago. It's open now to people and birds, and the 160 acre park will open a little bit later on this year.

I am here today to request $5 million for further recreation development in the basin. Details about how that money would be spent are on Page 2 of the statement to be submitted; but it includes, Mr. Chairman, development of an additional 80 acres of parkland.

It may not sound like an awful lot to some of you, but it's an enormously wonderful asset for this very heavily populated portion of Los Angeles.

Actually it's half the population of the City of Los Angeles that live in the valley, and they have virtually no recreation area.

This additional development would be cost shared with the City of Los Angeles, as was the original development. And it is providing $5 million worth of improvements through the water system there.

As was the case previously, also, we need and are asking for legislative language exempting this project from the Corps' policy, which requires a local sponsor to assume operation and maintenance expenses at a Corps project.

As a condition of participation in the recreation development program, we feel that this is fair, and it's only fair. While the Federal Government has paid for recreation, operation, and maintenance in many older Corps projects, Los Angeles has paid for all of the recreational O&M expenses at Sepulveda and also for 96 percent of the recreational development, as well.

We would also like the funds, if we may, to remain available until expended. I am also here, Mr. Chairman, to ask for $1 million for an 18 month watercourse improvement study or reconnaissance study of the Los Angeles River, an important step, we believe, and hope toward revitalizing and restoring the river as a recreational and open space asset to the city.

If I may, Mr. Chairman, I would like to submit now for the record a letter from Mayor Tom Bradley in support of this statement.

Mr. BEVILL. Without objection, that will be made a part of the record.

[The letter from Mayor Tom Bradley follows:]

City of Los Angeles

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OFFICE OF THE MAYOR

TOM BRADLEY
MAYOR

March 26, 1990

Congressman Anthony Beilenson
House Office Building
Washington, D.C. 20515

Dear Tony:

An issue of special interest to me is the revitalization and restoration of the Los Angeles River. I have formed the Los Angeles River Task Force and the Los Angeles River Citizens Advisory Committee to reconcile the needs of the communities touched by the River with the mandates of the various public agencies who have some amount of authority over the River. The Los Angeles River must remain a flood control system; that is without doubt. However, it is possible to have both protection from flooding and a river which enhances the city.

The Department of City Planning has prepared a feasibility study for the Los Angeles River Greenbelt Corridor. This study has become one of a number of focal points in a community effort to revive and restore the Los Angeles River right-of-way as a recreational and open-space asset to the region.

In conjunction with these efforts, a Los Angeles River Watercourse Improvement Study is proposed, to be undertaken by the Federal government in close coordination with the City of Los Angeles, the Los Angeles County Department of Public Works and other appropriate federal, state and local agencies. The study would assess opportunities to improve water conservation, transportation, recreation and environmental enhancement in and around the Los Angeles River. Such a study could assist in realizing local desires for reclamation of rights-of-way alongside the river for recreational, environmental and aesthetic purposes. Some of the proposals to be examined would include the following:

> Development of bicycle paths in the rights-of-way to facilitate transportation and recreation;

"AN EQUAL EMPLOYMENT OPPORTUNITY-AFFIRMATIVE ACTION EMPLOYER"

Recyclable and made from recycled waste

An analysis of design trade-offs that would preserve or improve existing flood control while moving towards a more natural riverine environment;

Determine the feasibility of creating and restoring new spreading grounds within or adjacent to the Los Angeles River to allow beneficial re-use of tertiary treated effluent two wastewater treatment plants currently discharging into the Los Angeles River.

The Federal reconnaissance study will require an estimated $1.0 million and 18 months. The City of Los Angeles will work in conjunction with the Army Corps of Engineers to further define the study emphasis.

The proposed Los Angeles River Watercourse Improvement Study should be conducted by the U.S. Army Corps of Engineers as the Corps' expertise on the Los Angeles River will allow for the development of a plan that balances the need for flood protection while recognizing the mandate of the people for an improved urban environment and greater utilization of available resources. The Corps can assist the city in improving life for the inhabitants of Los Angeles and in pursuing goals consistent with the national objectives of improved water conservation, environmental restoration, transportation and recreation.

I would like to discuss this with you further, and I hope we will be able to work together to bring about this historic environmental restoration project.

Thank you for your consideration.

Sincerely,

Tom

TOM BRADLEY
Mayor

TB:wh

Mr. **Beilenson**. Finally, I would like to request $400,000 for a storm and tidal wave study which will be cost shared. It will be joined, I think has been joined and will be, from my colleagues from neighboring districts in this particular request.

We don't have enough information to predict whether we are going to have more devastating storms or how fast the shore is eroding.

The data the Corps can obtain and analyze with this funding will lead to planning decisions which will help protect our valuable coastal resource.

So thank you very much for giving me this opportunity to testify, and thank you very much for your support in the past. I hope you will be able to help us out again this time.

[The statement of Hon. Anthony C. Beilenson follows:]

STATEMENT OF CONGRESSMAN ANTHONY C. BEILENSON BEFORE THE SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT OF THE HOUSE APPROPRIATIONS COMMITTEE

APRIL 4, 1990

Mr. Chairman, I appreciate the opportunity to testify before this subcommittee today in support of funding for recreational development in the Sepulveda Flood Control Basin, as well as for a watercourse improvement study for the Los Angeles River and a storm and tidal wave study for the South Coast region of California.

The Sepulveda Basin, which is located in the San Fernando Valley and lies within the congressional district I represent, is an Army Corps of Engineers' flood control project which was begun in the 1930's. Much of the Corps' 2,150 acres of Basin land has been leased to the City of Los Angeles for recreational purposes, but some of it continues to be leased--inappropriately, in my opinion--to private agricultural concerns.

For FY 85 and FY 87, Congress appropriated a total of $10 million for recreational development in the Basin, which was matched by the City of Los Angeles. Those funds have been used for the development of two sections of the Basin: one area is a 160-acre informal park, built around a 26-acre fishing and boating lake which will use reclaimed water. This area, called Lake Balboa Park, will be open to the public later this year. The second area is a 60-acre wildlife reserve, including an 11-acre pond, which was completed and opened to the public earlier this year.

We greatly appreciate the funds this subcommittee made available for those two projects, which I'm certain you would agree are a very worthwhile use of our limited federal dollars. Green space and outdoor recreation areas are quite scarce in the San Fernando Valley, and these parks will go a long way toward meeting the recreation needs of the one and a half million Valley residents.

To build upon and expand the Corps' work, however, we will need an additional appropriation for FY 91, and I am here today to request that the subcommittee provide $5 million for further recreational development in the Basin. Specifically, the Corps will need $1 million for site improvements--such as traffic barriers and additional landscaping--at Lake Balboa Park; $1 million for trails, terracing, and plantings to enhance the creek that runs through the Basin; and $3 million for the development of another 80 acres of informal park area, which would include parking, landscaping, picnic tables, and restrooms.

As before, this additional development would be carried out under the Corps' Code 710 program, under which a 50-50 cost-sharing arrangement with a local sponsor is required. In this case, the City of Los Angeles will be providing $5 million worth of development through construction of the park's water supply system. The City will also assume all operations and maintenance expenses for the new recreational facilities, as it does now, and always has, for all of the recreational land it leases from the Corps.

Because the City does assume operation and maintenance expenses at the Sepulveda Basin, we are again seeking from the subcommittee--as we did previously--an exemption from the Corps' policy which calls for local sponsors of a 50-50 cost-sharing project to assume operation and maintenance costs at a Corps project equal in value to the federal contribution for development costs of the sponsored project. This policy was apparently intended to help relieve the Corps of recreational operation and maintenance expenses at Corps' projects.

However, at Sepulveda Basin, the Corps has not paid for any recreation operation and maintenance expenses and, in fact, has not even paid for much of the recreation development costs. From 1959, when the first recreational uses were begun, to the present, the City of Los Angeles has assumed all of the operation and maintenance costs and has also paid for about 96% of the recreation development. All along, the City has paid for the kinds of recreation costs at the Basin that the federal government has paid for at many other projects.

Because the City has assumed such a large share of expenses at this Corps project--and will continue to do so--it does not seem fair or logical to require Los Angeles to pay for operation costs of a Corps project somewhere else in the U.S. as a condition for participation in the Code 710 program. Thus, we are asking the subcommittee to direct that funds be used for recreational development, as a way of exempting this project from the Corps policy, as was done when funds were appropriated for FY 85 and FY 87. We would also ask that language specify that the funds are to remain available until expended.

In addition, I would also like to request that the subcommittee provide $1 million for a reconnaissance study of the Los Angeles River. Under this study, which would require 18 months to complete, the Corps would assess opportunities to improve water conservation, transportation, recreation and environmental enhancement in and around the Los Angeles River.

This watercourse improvement study is also supported by the City of Los Angeles; Mayor Tom Bradley is strongly committed to revitalizing and restoring the river. Although this study would not be cost-shared, city officials would be working closely with the Corps on it. The Corps' expertise is needed for the development of a plan that balances the need for flood protection with the community's desire for aesthetic and recreational improvements along the river.

Finally, I would like to request that the subcommittee provide $400,000 to initiate a storm and tidal wave study for the South Coast region of California, which would be cost-shared with Orange and Los Angeles counties. Other members of the delegation may be making this same request to you, since the study would cover several congressional districts.

Many areas along the coast have been and continue to be seriously affected by erosion and damage from coastal storms; Malibu, for example, which lies in the congressional district I represent, suffered substantial damage from the 1983-84 winter storms. We don't have enough information to predict whether future storms could be even more severe, or to know how quickly erosion is occurring. This study would gather, analyze, and make available the data needed to make decisions which will help preserve our valuable coastal resources in the South Coast region.

Thank you, again, for this opportunity to testify and for your consideration of my request. I greatly appreciate the help this subcommittee provided in the past, and hope that you will be again be able to provide funds for these very important projects.

Mr. **Fazio**. Thank you, Tony. We appreciate your support for us, as well.

Tom Campbell was here, but he's not at the moment. I will put his remarks in the record at this point, and now go to Charlie Pashayan, another Member of the Water Power Subcommittee, a former Member, now a Member of the Rules Committee, as well.

[The statement of Hon. Tom Campbell follows:]

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Congress of the United States
House of Representatives

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ARMS CONTROL AND FOREIGN POLICY CAUCUS
CONGRESSIONAL CAUCUS FOR WOMENS' ISSUES

CONGRESSMAN TOM CAMPBELL
Testimony before the Energy and Water Development subcommittee
April 4, 1990

I would like to thank the chairman, vice-chairman Myers, and Mr. Fazio for the opportunity to appear before the subcommittee this morning.

Mr. Chairman, the subcommittee will today hear testimony from the Santa Clara Valley Water District. Here this morning are three members of the District's Board of Directors: Sig Sanchez, Jim Lenihan, and Joe Judge. Also here is the general manager, Ron Esau; the general counsel, Albert Williams; and Stan Williams, the assistant general manager for flood control.

Mr. Chairman, we have several priorities for the subcommittee's consideration. To list them briefly, they are $9,000,000 for continuing construction on the Guadalupe River, $424,000 for preconstruction engineering and design on Coyote and Berryessa Creeks, $300,000 for a survey of the Upper Guadalupe River, and $2,000,00 for reimbursement of local funding on the Pajaro River.

It is this last item, for Pajaro River, that I would like to expound upon, since I know that the subcommittee's time is limited and that others will eloquently express my views on the other projects. The $2 million for Pajaro River is included in the President's budget request and is required for full reimbursement of the local funding which was committed to the project.

The Pajaro River: Uvas Carnadero Creek Project was completed in July 1989. The project protects the southern part of the City of Gilroy from flood flows. This area includes about 600 homes, a new high school, and several commercial and business establishments. The local sponsors have fulfilled their payment obligation of 50% of project costs, and the $2 million requested from the subcommittee is to complete reimbursement of the local sponsor costs that are in excess of their required 50% contribution. I believe that this request is reasonable and will close the book on a sucessfully-built flood control project that will protect Gilroy from up to $20 million worth of damage from a catastrophic flood.

Mr. Chairman, thank you for the subcommittee's careful consideration of the Pajaro River reimbursement and the other important projects I mentioned earlier. Again, I greatly appreciate the opportunity to appear before you today.

THIS STATIONERY PRINTED ON PAPER MADE OF RECYCLED FIBERS

Mr. **Pashayan**. Thank you very much, Mr. Chairman and Mr. Fazio.

I will submit my full statement for the record and just highlight my remarks by saying that we look for $145,000 on the Tule River, $70,000 on the Kaweah River, and $7.5 million for the Red Bank and Fancher Creeks.

You remember, Mr. Chairman, your old friend Bernie Sisk. Some of these projects go back a long way, and they still need to have some progress. A quarter of a million dollars for the Caliente Creek in Kern County, three million for New Melones, and there is two or three more that my statement mentions.

Let me just say that those of us who have dealt with your subcommittee, Mr. Chairman, have a great deal of faith in you and your subcommittee. We know that there is a lot of competition out there for funds.

We know that the budgetary process is largely in turmoil, and we look to your subcommittee and your committee to make the right decisions with a lot of these projects.

And those of us who tend to go along with your committee look forward to working with you in the future.

[The statement of Hon. Charles Pashayan follows:]

STATEMENT OF REPRESENTATIVE CHARLES PASHAYAN, JR., BEFORE THE SUBCOMMITTEE ON ENERGY AND WATER RESOURCES, COMMITTEE ON APPROPRIATIONS, APRIL 4, 1990

Mr. Chairman, members of the Subcommittee, it is always a pleasure for me to appear before you on behalf of water and power projects within my 17th Congressional District in California, as well as my State and the West.

Generally, I am today endorsing the spending proposed in the President's budget for both the Corps of Engineers and the Bureau of Reclamation.

General investigations and surveys by the Corps of Engineers in my District include projects on the Tule River for $154,000, a $90,000 increase over the President's request, and on the Kaweah River for $70,000.

There are two construction projects either in my District or impacting it favorably. They include Red Bank and Fancher Creeks for $7.5 million, and a clearing and snagging project on the San Joaquin River. The request by the California Water Commission is for $2 million, which was the amount appropriated in 1989 but not spent.

I also endorse the request of $250,000 for further work by the Corps of Engineers on Caliente Creek in Kern County, and the $3 million for the Corps to develop recreational facilities at New Melones. This has been a dream since 1962 when this project was authorized and is a needed component of the multi-purpose facility. Neither of these are in my Congressional District, but I do support those specific project funding proposals.

For the Bureau of Reclamation, I endorse the $50,000 for the San Joaquin Valley Conveyance Study, and the $2,911,000 for the San Luis Unit of the Central Valley Project. This includes $500,000 to begin the Arroyo Pasajero Project, which is aimed at alleviating the introduction of short-fibered asbestos into the San Luis Canal.

Later, the California Water Commission will address the need for an additional $150,000 in funding to continue the studies of off-stream storage facilities in the San Joaquin and Sacramento Valleys. I endorse those needs, as well as the need for continued work at the Coleman National Fish Hatchery.

Mr. Chairman, thank you for your patience and understanding, and I look forward in working with the Subcommittee to attain passage of this year's Energy and Water Development Appropriations bill.

Mr. **Bevill**. Thank you.

Mr. **Fazio**. Thank you.

I think I would now like to turn to a good friend from San Francisco who, I hope, will some day be a Member of our committee, Nancy Pelosi.

Mrs. **Pelosi**. Thank you, Mr. Fazio. It's a pleasure to be here this morning.

I would prefer to be on the other side of the microphone there.

Mr. **Fazio**. Just a matter of time.

Mrs. **Pelosi**. That is what you keep saying.

In any case, I will be very brief and would like to submit my full statement for the record.

But first, I would like to thank the chairman of the committee and you, Mr. Fazio, and the other Members of the committee to express my eternal gratitude to you for the breakwater in San Francisco.

We do have a few other little housekeeping items I would like to bring up this morning. They don't amount to much compared to what I have heard here this morning.

Two of my requests are specific to San Francisco and then to the larger issue of the Bay Area. As I said, I would like to submit my statement for the record and be brief.

Mr. **Bevill**. It will be made part of the record.

Mrs. **Pelosi**. Thank you.

Last year, the subcommittee appropriated $150,000 of a $340,000 request for a study for the erosion problems of Ocean Beach, San Francisco. This year I am requesting that the additional $190,000 be appropriated for fiscal year 1991.

The expertise of the Corps of Engineers is essential to developing long-term solutions to the erosion that threatens Ocean Beach, it's residents, and the sewer transport system.

My second request is for $400,000 to study transfer of authority from the City of San Francisco to the Army Corps of Engineers for maintenance of the dredge approach channels to Piers 80, 94, and 96.

This is necessary, Mr. Chairman, and Mr. Fazio, because the Port of San Francisco has spent $1.7 million to dredge a new channel to allow larger ships to maneuver more safely in and out of San Francisco Bay. This is a safety issue.

The Corps has existing authority for a nearby channel that is no longer needed by the Port of San Francisco. This study by the Corps would determine the feasibility of transferring this authority.

Now, for two issues more of interest to the entire Bay Area rather than San Francisco specifically. The long delay by the Environmental Protection Agency and the Army Corps of Engineers has left the Bay Area without a long-term management strategy for dredging projects.

Our colleague, Mr. Miller, addressed this. I wish to associate myself with his remarks. I am requesting that the Corps receive funding for its role in the long-term management strategy so that a workable solution can be reached expeditiously.

To address the dredging crisis that exists in our community, every effort is being made by the Bay delegation to work with the

Army Corps of Engineers to locate disposal sites for short-term or alternative use.

In addition, the local community is working to develop a cost-sharing formula to offset the cost.

I am joined today by Veronica Sanchez, a representative of the Port of San Francisco, who will be available to answer any questions; but I do not believe she plans to testify this afternoon.

One last item very briefly, Mr. Chairman. The Defense Department hiring freeze has severely restricted the Corps' activities to enforce Federal wetlands regulations. There are currently five full-time employee vacancies in Region 9.

As a result, the Corps is unable to keep pace with the wetlands permit violations in the Bay Area. This is a serious problem for our state, where 90 percent of the wetlands have been lost in the last century; and it's a particularly pressing problem for the Bay Area where development threatens scarce wetlands.

[The statement of Hon. Nancy Pelosi follows:]

STATEMENT OF REPRESENTATIVE NANCY PELOSI
BEFORE THE SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
COMMITTEE ON APPROPRIATIONS

APRIL 4, 1990

MR. CHAIRMAN, MEMBERS OF THE SUBCOMMITTEE:

THANK YOU FOR MAKING THIS TIME AVAILABLE TO THE CALIFORNIA DELEGATION.

I KNOW THE SUBCOMMITTEE THOUGHT IT WAS FINISHED WITH SAN FRANCISCO FOUR YEARS AGO WHEN THE BREAKWATER WAS COMPLETED, BUT THERE IS STILL SOME UNFINISHED BUSINESS TO PROTECT THE WATER RESOURCES OF SAN FRANCISCO BAY.

LAST YEAR, WHEN I APPEARED BEFORE THIS SUBCOMMITTEE, I REQUESTED FUNDING OF $340,000 FOR A CORPS OF ENGINEERS' STUDY OF THE EROSION PROBLEMS AT OCEAN BEACH, SAN FRANCISCO. TO COMPLEMENT THE $150,000 WHICH WAS APPROPRIATED FOR FISCAL YEAR 1990, I AM REQUESTING THAT THE ADDITIONAL $190,000 NEEDED TO CONTINUE THE STUDY BE APPROPRIATED FOR FISCAL YEAR 1991.

ON A SECOND MATTER, THE COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION HAS AUTHORIZED $300,000 FOR A STUDY ON THE TRANSFER OF AUTHORITY FROM THE PORT OF SAN FRANCISCO TO THE ARMY CORPS OF ENGINEERS TO MAINTAIN CERTAIN DREDGE CHANNELS IN SAN FRANCISCO BAY. THE PORT OF SAN FRANCISCO HAS ALREADY SPENT $1.7 MILLION ON A NEW CHANNEL THAT BORDERS ONE UNDER CORPS AUTHORITY THAT IS NO LONGER REQUIRED.

MY SECOND REQUEST IS FOR $300,000 IN FUNDING FOR THE CORPS TO MAINTAIN THE DREDGE APPROACH CHANNELS TO PIERS 80, 94 AND 96.

MY THIRD REQUEST RELATES TO AN ISSUE OF CRITICAL IMPORTANCE TO THE ENTIRE BAY AREA. I MUST SAY THAT I AM VERY DISAPPOINTED WITH THE PERFORMANCE OF THE FEDERAL AGENCIES RESPONSIBLE FOR SEEKING A SOLUTION TO THE DREDGING CRISIS THAT EXISTS IN THE BAY. THE LONG DELAY BY THE ENVIRONMENTAL PROTECTION AGENCY AND THE ARMY CORPS OF ENGINEERS HAS LEFT THE BAY AREA WITHOUT A LONG TERM MANAGEMENT STRATEGY FOR DREDGING PROJECTS. FIVE YEARS HAVE LAPSED WITHOUT ANY VISIBLE PROGRESS, AND NOW THESE AGENCIES ARE PREDICTING THAT IT COULD TAKE YET ANOTHER FIVE YEARS TO DEVELOP A FINAL MANAGEMENT PLAN.

IN THE MEANTIME, NEW WORK PROJECTS ARE HALTED AND THE ENTIRE ECONOMY OF THE BAY AREA IS AT STAKE IF A LONG-TERM SOLUTION IS NOT PURSUED AGGRESSIVELY BY THE FEDERAL, STATE AND LOCAL AGENCIES INVOLVED IN DEVELOPING THE PLAN. THE ENVIRONMENT OF THE BAY ALSO STANDS TO LOSE IF ALTERNATIVES TO IN-BAY DISPOSAL SITES ARE NOT DESIGNATED.

TWO IMPORTANT RECOMMENDATIONS CAME OUT OF THE RECENT GENERAL ACCOUNTING OFFICE REPORT WHICH WAS REQUESTED BY THE BAY AREA DELEGATION:

1) THAT THE ARMY CORPS OF ENGINEERS TAKE SPECIFIC STEPS TO ENSURE THAT THE FEASIBILITY OF LOCATING OCEAN DISPOSAL SITES OFF THE OUTER CONTINENTAL SHELF BE CONSIDERED.

2) THAT THE EPA AND THE CORPS REACH AGREEMENT ON AND ISSUE REVISED GUIDANCE FOR THE BIOLOGICAL TESTING NEEDED TO PREDICT THE TOXICITY OF CONTAMINATED DREDGED MATERIAL AND TO TAKE STEPS TO ENSURE THAT ENVIRONMENTAL DAMAGE AT EXISTING OCEAN AND BAY DISPOSAL SITES IS KEPT WITHIN ACCEPTABLE LEVELS.

IN ORDER TO OFFSET THE IMMEDIATE PROBLEM THAT FACES OUR COMMUNITY, EVERY EFFORT IS BEING MADE BY THE BAY DELEGATION TO WORK WITH THE ARMY CORPS OF ENGINEERS TO LOCATE DISPOSAL SITES FOR SHORT-TERM, OR ALTERNATIVE, USE. THIS INCLUDES A REVIEW OF UPLAND SITES, AS WELL AS LOCATIONS WHERE LEVEE REINFORCEMENT OR WETLANDS CREATION MIGHT BE A POSSIBILITY.

THE EPA AND THE CORPS HAVE ALSO ENTERED INTO A MEMORANDUM OF AGREEMENT WHICH SPECIFIES THAT EPA WILL ASSUME ITS PROPER LEADERSHIP ROLE IN THE OCEAN DESIGNATION PROCESS. IN ADDITION, MR. CHAIRMAN, THE LOCAL COMMUNITY IS WORKING TO DEVELOP A COST-SHARING FORMULA TO ASSIST THE FEDERAL EFFORT. REPRESENTATIVES FROM THE PORT OF SAN FRANCISCO WILL DISCUSS THIS ISSUE WITH THE SUBCOMMITTEE LATER THIS MORNING.

I AM REQUESTING THAT THE CORPS RECEIVE FULL FUNDING FOR ITS ROLE IN THE LONG TERM MANAGEMENT STRATEGY SO THAT A WORKABLE SOLUTION CAN BE REACHED, EXPEDITIOUSLY, TO ADDRESS THE DREDGING CRISIS THAT EXISTS IN OUR COMMUNITY.

ONE LAST ITEM, MR. CHAIRMAN, THE DEFENSE DEPARTMENT HIRING FREEZE HAS SEVERELY RESTRICTED THE CORPS' ACTIVITIES TO ENFORCE FEDERAL WETLANDS REGULATIONS. THERE ARE CURRENTLY FIVE FULL TIME EMPLOYEE VACANCIES IN REGION 9. AS A RESULT, THE CORPS IS UNABLE TO KEEP PACE WITH THE WETLANDS PERMIT VIOLATIONS IN THE BAY AREA. THIS IS A SERIOUS PROBLEM FOR OUR STATE WHERE 90% OF THE WETLANDS HAVE BEEN LOST IN THE LAST CENTURY, AND IT IS A PARTICULARLY PRESSING PROBLEM FOR THE BAY AREA WHERE DEVELOPMENT THREATENS SCARCE WETLANDS.

THANK YOU, MR. CHAIRMAN, MEMBERS OF THE SUBCOMMITTEE. I APPRECIATE YOUR TIME AND ATTENTION TODAY, AND THE GENEROSITY YOU HAVE SHOWN TOWARD SAN FRANCISCO.

Mr. Fazio. And last, but certainly not least, a Member of the Ways and Means Committee, Bill Thomas.

Mr. Thomas. Mr. Chairman, I have with me again today, as we have in the past, a Supervisor from the Second District in Kern County, Ben Austin: the project called Caliente Creek is in his district.

You are familiar with this project from past testimony. It was the Nation's first cost-sharing project. It had been moving along with more than $1.3 million committed and spent by the locals when, due to no one's fault in particular, a reassessment of the anticipated sedimentation rate in the flood plain, jeopardized the project.

Consequently we are now back to the drawing board attempting to handle that very fundamental problem.

The 1991 request, therefore, is for $250,000 to work our way out of this narrow problem.

In addition, Mr. Chairman, I am requesting that you examine the funding procedure for the Port San Luis breakwater.

Port San Luis has a breakwater that was constructed in the early part of this century for a design height of 16 feet above the mean water level. It has since eroded down to 11 feet above the mean water level.

There was a significant storm in the early 1980s that did much damage along the coast, as you well know. Your subcommittee provided tremendous resources to bring California back from that.

My only concern is that the total cost of restoring the breakwater is something over $2 million. The Corps has budgeted one million plus this year and a million plus next year. But because this is a project that could be completed in one year, it doesn't make sense to me not to provide funds to actually complete the project in one year. So we can get the protection back up to where it should be. Otherwise, it will continue to erode even while the project is in progress working.

Since it's not a significant amount of money, I think the Corps' FY 1991 request and the anticipated FY 1992 request should be combined, in a single $2.306 million appropriation for FY 1991.

Thank you very much.

[The statement of Hon. William Thomas follows:]

Statement of the Honorable
WILLIAM M. THOMAS
Member of Congress, 20th District of California
House Committee on Appropriations
Subcommittee on Energy and Water Development
April 4, 1990

Thank you, Mr. Chairman and members of the Subcommittee, for this opportunity to testify today in support of funding for two projects being conducted by the Army Corps of Engineers in my district. The first, with which you are familiar from my testimony over the last several years, is the Caliente Creek Flood Control Project in Kern County, California. The second is a request for funding above that contained in the President's budget for FY 1991 to repair the breakwater at Port San Luis in San Luis Obispo County, California.

CALIENTE CREEK

As you may recall, Caliente Creek was the nation's first federal project in which the feasibility study was funded under a 50 percent cost-sharing agreement between local interests and the Army Corps of Engineers. Upon completion of that feasibility study back in December of 1988, everyone involved in the project, including the Corps, the local sponsors, and the affected communities, were sure that an acceptable, cost-effective design configuration involving a single flood-detention reservoir and two flood channels, was finally on its way to completion.

Unfortunately, this was not the case.

During the Corps' Washington-level review of the recommended project design, a previously unknown sedimentation problem arose. Further investigation revealed that the problem was serious enough to call the feasibility of the entire project into question. Subsequently, on February 9th of this year, the Corps informed the local sponsors that the recommended project was not, in fact, feasible because of the sedimentation problem, and that an examination of new alternatives would have to be undertaken. The Corps estimated the cost of this additional work, including additional sedimentation studies and a feasibility-level comparison of the most promising alternatives, at $500,000. This amount would be cost-shared on a 50-50 basis with the local sponsors.

Since that February 9th meeting, the local sponsors of the project, although obviously disappointed (they have already spent more than $1.3 million in cash and in-kind services for their share of the feasibility study), have committed to cost sharing the necessary additional work. Although it means an unanticipated addition in cost to the local sponsors of $250,000, no one questions the fact that some kind of flood control project on Caliente Creek is necessary. Twice in the last 10 years, once in 1978, and again in 1983, flood damage to both agricultural and urban lands in the vicinity of Caliente Creek totaled more than $36 million dollars. Without a control project, there is every reason to expect that similar floods with similar, or additional, damage will continue unabated.

Mr. Chairman, I have appreciated the Subcommittee's support of this project in the past and I am hopeful that I can continue to count on your support in the future. The people involved in this project have sustained a disappointing setback, it is true. Yet, as you will hear later today, they remain firmly committed to seeing this project through to completion. In furtherance of that objective, I respectfully request an appropriation of $250,000 in FY 1991 for Corps of Engineers work on the Caliente Creek Flood Control Project.

PORT SAN LUIS BREAKWATER

I would also like to request an addition to the President's budget request for repairs to the Port San Luis breakwater. Constructed in 1913, this breakwater was originally built to a height of +16 feet above Mean Lower Low Water (MLLW). Over the years, however, weathering has reduced the rubblemound structure to an average elevation of +11 feet above MLLW, a height insufficient to provide adequate break protection for the San Luis harbor.

Recognizing the inadequacy of the current structure, the President's budget includes $1.288 million for the Corps of Engineers to complete about half of the estimated $2.306 million in construction needed to restore the breakwater to design specifications. However, because the breakwater continues to deteriorate the longer repairs are postponed, and also because the construction can be completed in a single season, it would be more practical to fund the entire project in a single appropriations cycle. As such, I respectfully request that $2.306 million be appropriated in FY 1991 for the Corps of Engineers to complete repairs on the Port San Luis breakwater.

Mr. FAZIO. Thank you, Bill. We appreciate your brevity and your good support over the years.

Three other Members who have an awful lot of interest in the work of this committee but couldn't be here today, Leon Panetta of Monterey, Gary Condit of Los Angeles County, and Bob Matsui of Sacramento will have remarks placed in the record at this time.

[The statement of Hon. Leon Panetta follows:]

TESTIMONY OF THE HONORABLE LEON E. PANETTA BEFORE THE APPROPRIATIONS SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

APRIL 4, 1990

Mr. Chairman and Members of the Subcommittee, thank you for this opportunity to present testimony supporting several important water resource projects in my Congressional District. The 16th District of California includes Monterey, Santa Cruz, San Benito and San Luis Obispo Counties. Because so much of my District is on the coast, these water projects are among the most important of my responsibilities. I appreciate the cooperation the Committee has afforded me in the past and look forward to a continuation of this relationship.

I certainly recognize the budget constraints facing Congress and the Committee this year. However, the requests that I am making today involve either existing obligations or work recognized as needed for public safety. Let me briefly discuss these projects:

1) San Felipe Division of the Central Valley Project

A) Watsonville Subarea

The President's budget contains $300,000 to complete the the feasibility study for the Watsonville subunit facilities that are part of the Central Valley Project. Last year the Committee provided $100,000 for this study. However, an additional $300,000 is needed to complete the work. The work has been started and it is imperative that continued funding be provided, so that not only can the study be completed, but so that the funds provided last year will not have gone to waste.

Groundwater monitoring wells have confirmed the presence of seawater intrusion inland. Continued overdraft and seawater intrusion threaten Pajaro Valley agriculture, which is the economic base of this productive valley. The Water Management Agency believes that the 19,900 acre feet of water available through the San Felipe Division represents a solution to this serious problem.

B) San Felipe Division

The President's budget provides for an additional $1.415 million for the completion of the Santa Clara Tunnel, Section 2 of the San Felipe Division of the Central Valley Project. I urge the Subcommittee to approve this funding.

2) Morro Bay Harbor

A) The President's budget provides for $270,000 for Pre-Construction

Engineering and Design of the entrance to Morro Bay Harbor. This funding will allow the Corps to complete this feasibility study of methods of addressing the extremely dangerous conditions in Morro Bay Harbor. I urge the Subcommittee to approve this request. The Corps has completed a reconnaissance study of the Harbor, which demonstrates that deeper dredging and reconfiguration of the Harbor entrance would be an effective means of eliminating extremely dangerous breaking waves at the entrance to the Harbor. The Corps is presently conducting work on a feasibility study for this project.

The Members of the Subcommittee may remember this project from previous years. Let me take a moment to explain the problem. Shoaling at the entrance to the Harbor causes enormous waves to form, making passage in and out of the Harbor extremely treacherous. Many individuals have lost their lives attempting to negotiate the entrance. The death of Al French, an experienced commercial fisherman, galvanized support from many groups and individuals along the California coast for an improvement in these dangerous conditions. It is ironic that Morro Bay Harbor is the only "port of refuge" between Monterey and Santa Barbara, along the often treacherous central California coast.

In addition to the tragic death of Al French, Morro Bay Harbor was the site of the near-miss experienced by 32 school children. In 1983, the charter vessel, "San Mateo", overturned at the entrance of the harbor. The 32 children on board were successfully rescued, but the captain of the vessel sustained fatal injuries in the accident and died shortly after the accident. The potential for further accidents is high. Approval of the Corps' request for $270,000 will fund the completion of the feasibility study, and will ensure that work can begin to make Morro Bay Harbor a safe harbor.

B) The President's budget also provides for $1.025 million for Operation and Maintenance of Morro Bay Harbor. The maintenance dredging is slated for the fall of 1990. As you know, regular maintenance is vital to the continuing operation of any harbor. I urge that the Committee accept the President's request.

3) Monterey Bay Breakwater Study

I would also like to urge the Subcommittee to accept the recommendation included in the Army Corps of Engineers' budget request for $210,000 for the completion of a study of the feasibility of extending the existing breakwater in Monterey Harbor. The original breakwater was constructed in 1934. In 1960, an extension of the project was authorized and design and testing on the extension were completed in 1971. At that time, the project called for two breakwaters and was designed to provide recreational benefits, shoreline protection and commercial fishing benefits. However, the City of Monterey was unable to provide financial support for the construction and Corps of Engineers classified the project inactive.

By working closely with the Corps the City has been able to breath new life into this important project. However, the Corps has identified a need for updated studies of the project. The new revised project calls for an extension of the existing breakwater of about 1000 feet. This extension would provide protection against breaking waves and, as a result, provide additional berthing and off-loading facilities for commercial fishing vessels and processors. Currently, capacity on the existing wharf is full and the industry cannot expand. Extension of the breakwater -- along with other improvements in facilities which the City would like to make, if the extension is approved -- would allow substantial growth in the fishing and fish processing industry, which is fundamental to the economic health of the City and provides employment for many.

4) San Lorenzo River Control Project

I urge the Subcommittee to accept the President's request for $198,000 for the completion of a feasibility study of measures to control the flooding problem on the San Lorenzo River and to begin preconstruction engineering measures. The flood problems of the San Lorenzo River date back to 1955. In that year, the City of Santa Cruz suffered a disastrous flood, resulting in the death of five persons and the displacement of 2,400 others, as well as damages estimated at some $40 million, in current dollars. In 1959, in response to this tragedy, the Corps built a channel and levee flood control project, but sediment build-up eventually raised the river bed to its original level. Studies after heavy storms in 1981-82 suggested that earlier information on river behavior and flows was erroneous and Congress authorized a new study.

Estimates suggest that a flood comparable to the 1955 flood would cause damages of some $70-$90 million. My constituents have lived under this threat for many years, and they are anxious to find a safe, permanent solution to this problem. Approval of the FY91 request will allow the study phase to be completed and help ensure that progress on this project continues uninterrupted and that a solution is found as quickly as possible.

5) Monterey County Flood Control and Water Conservation District

I am again requesting that the Subcommittee include $180,000 in matching funds for a three year study to help in the development of a long range water resources management plan for the Salinas basin and to develop and analyze potential structural and non-structural alternatives for addressing water supply and quality issues and problems and to optimize the use of ground and surface water. I made this request last year as well. Unfortunately, because of very tight budget restraints no funding was provided. However, I believe that this is a very important project and urge the Subcommittee to provide funding this year.

The Salinas Valley is nearly 100% dependent on groundwater supplies to meet the demands of all agricultural, municipal and industrial users. Agricultural water requirements represent about 90% of the basin demands. The mainstay of the Salinas Valley economy is it's one billion dollar a year agriculture industry. In addition, the demand from municipal and industrial users is steadily increasing as well.

Aquifers of the Salinas Valley are currently threatened by saltwater intrusion. Overdraft is resulting in declining water levels in the unconfined portions of the basin, and is causing seawater intrusion in the confined coastal aquifers. Nitrate contamination is occurring at a rapid rate throughout the Salinas basin, further serving to constrain the management options available for providing municipal and domestic supplies. Given the relative scarcity of the water resources, there is increasing competition between all beneficial uses.

The County has developed a three-year proposal that will be funded with federal matching funds. A water resource management plan is vital to the continuing economic security of the Salinas Valley. I urge the Subcommittee to include the $180,000 request for this project.

6) Santa Cruz Harbor

Finally, I would like to request that the Committee provide $300,000 to undertake a reconnaissance study by the Corps of Engineers authorized under P.L. 99-662. The study is intended to identify alternatives to deal with the shoaling and breaking waves at the entrance to the harbor. It is important that this study be started as soon as possible so that a solution may be found and work can begin on making the entrance safer.

Let me take this opportunity to thank the Chairman and members of the Subcommittee for their consideration and support for projects in my district in the past. I hope that the Subcommittee will continue its support for these important projects in Fiscal Year 1990.

[The statement of Hon. Gary Condit follows:]

Honorable Gary A. Condit

Testimony Before the House Appropriations Subcommittee

On Energy and Water Development

April 4, 1990

I appreciate the opportunity to testify before your subcommittee today regarding several water projects of vital importance to my district, as well as to a good portion of California's Central Valley.

1) San Joaquin River Main Stream and Tributaries Investigation-- I would like to urge that the subcommittee appropriate $500,000 to the Corps of Engineers to perform a reconnaissance level study on the San Joaquin River and Tributaries from Friant Dam down stream to the Delta. There is a large group of concerned agencies, including the State Reclamation Board, the State Water Commission and many local agencies meeting regularly to identify actions which can be taken regarding the San Joaquin River to benefit all legitimate uses of the San Joaquin River Management Program. The program objective is to develop comprehensive and compatible solutions to water supply, water quality, flood control, fisheries, wildlife habitat and recreation needs. The study that the Corps would conduct would provide input and needed answers to many parts of the management program.

2) Lower San Joaquin River Clearing and Snagging-- The clearing and snagging of the San Joaquin River is a vital flood control project to the Central Valley. Since 1983, the Army Corps of Engineers has been authorized to clear and remove selective debris in order to restore channel capacity to historic levels. Although I concur with the California State Water Commission's request that the funds appropriated from FY 1989-90 for this project be used for FY 1990-91, I would like to request that the committee include budget control language which either reverts or precludes reprogramming of unused funds. I make this request because of my concern relative to the on-going requests of this nature without significant progress on the part of the Corps.

3) Redbank-Fancher Creeks Flood Control Project-- Another important flood control project to the Central Valley is the Redbank-Fancher Creeks Flood Control Project which will provide protection to southeast Fresno, including the Fresno Air Terminal. The subcommittee's continued support of the funding budgeted by the President, $7.5 million, is critically important now that construction of this project is underway.

4) The Mid-Valley Canal-- The San Joaquin Valley Conveyance Feasibility Study has been in progress for six years, and is due to be released this month. This proposed project would supply water to off-set the serious ground water overdraft that is presently occurring on the east side of the San Joaquin Valley. I join with the Mid-Valley Water Authority and the State Water Commission's request to provide $50,000, which is not included in the President's proposed budget, to the Bureau to interface with the Water Authority in advance planning for the project.

5) Off-Stream Storage-- Another project of vital importance to the State's ability to meet its present and future demands for water is the Off-Stream storage investigations undertaken by the Bureau. The Bureau has been working jointly with the Army Corps of Engineers and the State Department of Water Resources to identify suitable sites for off-stream storage reservoirs. I would like to ask for a $150,000 appropriation to the Bureau to complete the feasibility study of this project. The potential is great for off-stream storage to provide much needed additional reservoir capacity for the conservation of water during periods of excess flows with significantly less environmental impact than traditional on-stream reservoirs.

6) Merced County Streams Project-- Lastly, I would like to urge the subcommittee's favorable consideration of the President's Proposed Budget to include $1.9 million in the Army Corps of Engineers' Budget to begin construction of Castle Dam. This project is designed to bring flood protection to eastern Merced County, including Castle Air Force Base. Authorized by Congress as part of the Flood Control Act of 1970, this project is a modification and enhancement to the previously constructed Merced County Stream Group Project.

I would like to thank the subcommittee for its consideration of these requests and appreciate the opportunity to be part of the process.

[The statement of Hon. Robert T. Matsui follows:]

STATEMENT OF

CONGRESSMAN ROBERT T. MATSUI

COMMITTEE ON APPROPRIATIONS

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

APRIL 4, 1990

Mr. Chairman, distinguished members of the Subcommittee, thank you for providing the opportunity to discuss the range of projects that are so important to the state of California. Your continued support for needed navigation, erosion and flood control projects, especially in light of continuing budgetary restraints, is commendable.

I come before you this morning to strongly recommend for your approval funding for several projects vital to the Sacramento area. As you well know, the Sacramento community has for some time now lacked sufficient flood protection. At risk are roughly 1.4 million lives and over $15 billion in flood damageable property. The Corps of Engineers has determined that approximately 32 of the 110 miles of the Sacramento River levee system are unstable. I am pleased to report that the local community, in conjunction with the Corps, has come to grips with the problem and has made significant progress in implementing a broad plan to address it. This will be a crucial year in fulfilling the directives of those plans, and that is why the Committee's continued funding of the Corps' initiatives is so important.

Included in the Corps' budget request for FY91 is $13.47 million for Sacramento Urban Area Levee Reconstruction; $5 million for the Sacramento River Bank Protection Project; $1.05 for the Sacramento River Flood Control Project; $2 million for American and Sacramento Rivers' Preconstruction Engineering and Design; and $400,000 for a flood damage protection study of the Yolo Bypass.

All of these projects are of tremendous importance to me and the other residents of Sacramento who literally live under a sword of Damocles, waiting for the next devastating flood to hit. The Sacramento River levees could burst under normal circumstances; they would not require a period of high flows in the Sacramento River. According to Corps studies, some of the surrounding areas would be 20 to 30 feet under water should these levees fail. Residents would have almost no time to evacuate their homes in the face of fast-rising waters, should these levees fail. I think it's clear that this work is imperative to the residents of the Sacramento area.

Mr. Chairman, the Corps' recommendations highlight the growing realization of the severity of Sacramento's flood control problems. Your approval of those funds will constitute a significant federal commitment to improving those problems and will go a long way toward putting the region on the road toward adequate protection. I hope that we can count on your continued interest and support.

WEDNESDAY, APRIL 4, 1990.

CALIFORNIA WATER COMMISSION

WITNESSES

CLAIR A. HILL, CHAIRMAN, FEDERAL APPROPRIATIONS COMMITTEE
STEPHEN HALL, VICE PRESIDENT, STATE RECLAMATION BOARD
GEORGE D. McKEAN, CHAIRMAN, BOARD OF DIRECTORS, MID VALLEY WATER AUTHORITY
JEFF L. TAYLOR, SECRETARY-TREASURER, MID VALLEY WATER AUTHORITY
AUDREY RATERMAN, ADMINISTRATIVE ASSISTANT, MID VALLEY WATER AUTHORITY
RICHARD L. SCHAFER, CONSULTING ENGINEER, MID VALLEY WATER AUTHORITY
JOE JUDGE, DIRECTOR, SANTA CLARA VALLEY WATER DISTRICT
ALBERT HENLEY, GENERAL COUNSEL, SANTA CLARA VALLEY WATER DISTRICT
MICHAEL ARMSTRONG, GENERAL MANAGER, PAJARO VALLEY WATER MANAGEMENT AGENCY
JOHN CAMPBELL, MANAGER, TEHAMA-COLUSA CANAL AUTHORITY
WILLIAM E. SEEGMILLER, GENERAL MANAGER, CONTRA COSTA WATER DISTRICT
DOUGLASS WILHOIT, CHAIRMAN, BOARD OF SUPERVISORS, SAN JOAQUIN COUNTY
COL. ALLEN BOONE, CHAIRMAN, FRESNO METROPOLITAN FLOOD CONTROL DISTRICT
ROGER SHINTAKU, ASSISTANT MANAGER, SANTA ANA WATERSHED PROJECT AUTHORITY
TERRY PAXTON, DIRECTOR, ENGINEERING SERVICES OFFICE, FLOOD CONTROL PLANNING, CITY OF SACRAMENTO
BEN AUSTIN, SECOND DISTRICT SUPERVISOR, COUNTY OF KERN
STUART PYLE, ENGINEER/MANAGER, KERN COUNTY WATER AGENCY
CARL L. BLUM, ASSISTANT DEPUTY DIRECTOR, LOS ANGELES COUNTY PUBLIC WORKS
GADDI VASQUEZ, SUPERVISOR, COUNTY OF ORANGE
KENNETH EDWARDS, CHIEF ENGINEER, RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
ROBERT L. HAMMOCK, SUPERVISOR, COUNTY OF SAN BERNARDINO
SHEILA LODGE, MAYOR, CITY OF SANTA BARBARA
LARRY BAGLEY, MAYOR, CITY OF OCEANSIDE
TIM McCULLOUGH, CONSULTANT, MERCED COUNTY ASSOCIATION OF GOVERNMENTS
LARRY LIBEU, DIRECTOR, ADMINISTRATIVE SERVICES, EASTERN MUNICIPAL WATER DISTRICT
JOHN. K. FLYNN, SUPERVISOR, COUNTY OF VENTURA
GERALD NOWAK, DEPUTY DIRECTOR, FLOOD CONTROL, UNITED WATER CONSERVATION DISTRICT
LYNN E. MAULHARDT, BOARD CHAIRMAN, UNITED WATER CONSERVATION DISTRICT
FRED GIENTKE, GENERAL MANAGER, UNITED WATER CONSERVATION DISTRICT
SHELDON BERGER, SECRETARY-TREASURER, UNITED WATER CONSERVATION DISTRICT
D. JAMES LAUGHLIN, GENERAL MANAGER, ELSINORE VALLEY MUNICIPAL WATER DISTRICT

CHARLES BRYANT, VICE PRESIDENT, ELSINORE VALLEY MUNICIPAL WATER DISTRICT

WILLIAM HURST, GENERAL MANAGER, MONTEREY COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Mr. FAZIO. Regrettably, we are behind schedule, but I would like to call upon Clair Hill, the Chairman of the California Water Commission, to come forward and to introduce his associates and others who will be testifying as we proceed.

We are really short on time. I apologize. We had more than half the delegation come this morning. I think that speaks to the urgency and concern with which all of our constituencies feel California must deal this water development and flood control problems.

Go ahead, Clair.

Mr. HILL. Thank you very much, Chairman Bevill and other Members of your committee and Mr. Fazio.

I am Clair Hill, as was announced, and I am Chairman of this Appropriation's Committee. I have other members of the committee here with me, as well as members of the State Reclamation Board.

I think you all know who they are, so I won't introduce them. We have coordinated our presentations with the presentation of the local agency prior to introducing the representatives, the local agency who will speak on specific projects. I will make a few general remarks.

The Commission supports the projects, the Corps of Engineers, and the Bureau of Reclamation. We support additional funding for certain Corps and reclamation projects that require additional consideration.

Our statement has been filed with the Commission.

First, so I don't forget, we sincerely appreciate this committee over the years. You have been very helpful to us and very considerate, and we of California certainly thank you.

I will now introduce the plane load of California delegation who are here who will be brief. I understand your time constraints, and they have filed their reports.

With that, I would like to introduce Mr. Steve Hall, who is Vice Chairman of the Reclamation Board.

[The statement of Clair Hill follows:]

STATE OF CALIFORNIA—RESOURCES AGENCY
GEORGE DEUKMEJIAN, Governor

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Katherine Dunlap - Los Angeles
Clair A. Hill - Redding
James J. Lenihan - Mountain View
James M. Stubchaer - Santa Barbara
Audrey Z. Tennis - Chico
Jack Thomson - Bakersfield

STATEMENT OF THE CALIFORNIA WATER COMMISSION

Before the
U.S. Senate, Committee on Appropriations
Subcommittee on Energy and Water Development
Honorable J. Bennett Johnston, Chairman

And Before the
U.S. House of Representatives, Committee on Appropriations
Subcommittee on Energy and Water Development
Honorable Tom Bevill, Chairman

By
Clair A. Hill, Chairman
Federal Appropriations Committee
California Water Commission

April 4, 1990

Mr. Chairman and Members of the Committee, I am Clair A. Hill, Chairman of the Federal Appropriations Committee of the California Water Commission. The California Water Commission is an official agency of the State of California. It is composed of nine representative citizens from throughout the State. The Commission is charged by statute with representing state and local interests before this Committee. We have coordinated our presentation with the presentations by local agency representatives. On behalf of the California Water Commission, I would like to express our sincere appreciation of the support this Committee has given California water and flood control appropriations over the years. I am privileged to appear before you with the official recommendations of the State of California for Fiscal Year 1990-91 appropriations.

The Commission supports funding for all projects of the Corps of Engineers and the Bureau of Reclamation included in the President's budget so that planning, design and construction of the projects can proceed on a timely schedule. Projects which are cost-shared by local agencies are moving ahead at a reasonable rate. These projects are shown on the attached document entitled, "California Water Commission - Federal Water and Flood Control Programs in California for Fiscal Year 1990-91."

RECOMMENDATIONS FOR ADDITIONAL FUNDS

The Commission is recommending that additional funds be appropriated for several projects of the Corps of Engineers, Bureau of Reclamation and the Fish and Wildlife Service, which are summarized in the following table. Brief comments on the need for the additional funds follow the table.

STATEMENT OF CALIFORNIA WATER COMMISSION
April 4, 1990
FY 1990-91

CWC NO.	PROJECT	PRESIDENT'S BUDGET	COMMISSION'S RECOMMENDATION
CORPS OF ENGINEERS			
	Northern California Streams		
9E	Sacramento River Restoration at Glenn-Colusa Irrigation District	--	$ 300,000
9G	Cache Creek Basin (Lake County)	--	500,000
9H	South Sacramento Urban Levees and Tributaries	--	500,000
	San Joaquin River Basin		
11-1	Caliente Creek (Kern County)	--	250,000
11-2	Tule River (Tulare County)	$ 64,000	154,000
11-8	San Joaquin River Mainstem and Tributaries	--	500,000
11-10	Arroyo Pasajero (Fresno County)	--	500,000
16	Walnut Creek Basin (Contra Costa County)	85,000	150,000
23	Carneros Creek (Santa Barbara County)	--	300,000
27D	Lower San Joaquin River - Clearing and Snagging *(Use remaining FY 1989-90 funds in FY 1990-91)	--	*
29	New Melones Lake (Calaveras, Tuolumne, Stanislaus Counties)	2,000,000	5,000,000
BUREAU OF RECLAMATION			
61-3	Shasta Dam Temperature Control Device (Shasta County)	--	$10,640,000
66	Salinas Valley Water Resource Management Plan (Monterey County)	--	180,000
73A	Eastern Municipal Water District Loan (Riverside County)	--	Support
73C	San Sevaine Creek Water Project Loan (San Bernardino County)	--	Support
79A	Off-Stream Storage	--	150,000
80	San Joaquin Valley Conveyance Study	--	50,000
80A	Delta Water Management Program	--	350,000
85	Refuge Water Supply	--	200,000
FISH AND WILDLIFE SERVICE			
107	Coleman National Fish Hatchery	1,500,000	5,300,000
	TOTALS	**$3,649,000**	**$25,024,000**
	TOTAL RECOMMENDED INCREASE		**$21,375,000**

CORPS OF ENGINEERS

Northern California Streams

CWC No. 9E - Sacramento River Restoration at Glenn-Colusa Irrigation District. Funding will allow the Corps of Engineers to complete the preconstruction engineering and design and the necessary environmental documentation, and to initiate construction.

CWC No. 9G - Cache Creek Basin (Lake County). Funding will allow the Corps to undertake a reconnaissance investigation of the alternative projects to reduce flood damages around Clear Lake.

San Joaquin River Basin

CWC No. 11-1 - Caliente Creek (Kern County). Kern County has determined that the presently proposed project is not financially feasible. The County is considering other alternatives to protect against repetitive flooding. The Commission supports the execution of an agreement between the County and the Corps and funding for the Corps to initiate the feasibility investigation.

CWC No. 11-8 - San Joaquin River Mainstem and Tributaries. Funding will allow the Corps to initiate a reconnaissance study to determine sediment sources in the San Joaquin River and the bypass systems and methods of solving the sedimentation problem in the interest of flood control.

CWC No. 11-10 - Arroyo Pasajero (Fresno County). Funding will allow the Corps of Engineers to undertake a one-year reconnaissance study which will focus primarily on flood control measures upstream of the California Aqueduct. The present DWR-USBR program focuses primarily on flooding and siltation of and near the Aqueduct. Current flood protection facilities have proved inadequate. Presently the Arroyo Pasajero basin cannot accommodate a ten-year flood unless emergency measures are taken. The proposed Corps study of possible detention reservoirs on the tributary streams would be complementary to the joint program of the DWR-USBR for flood control measures at or near the California Aqueduct.

CWC No. 23 - Carneros Creek (Santa Barbara County). Funding will allow the Corps of Engineers to initiate the preconstruction engineering and design of the recently reformulated Carneros Creek project.

CWC No. 29 - New Melones Lake. Additional appropriations will fund the initiation of construction of the remaining facilities at Glory Hole and Tuttletown Recreation Areas at New Melones Lake. Local agencies have agreed to support development of facilities at approximately fifty percent of the cost of facilities initially promised by the Corps of Engineers.

BUREAU OF RECLAMATION

CWC No. 61-3 - Shasta Dam Temperature Control Device. Funding will allow the USBR to initiate construction, thus assuring that the temperature control device is operational at the earliest possible time to maximize benefits to the winter-run Chinook salmon.

CWC No. 66 - Salinas Valley Water Resource Management Plan (Monterey County). Funding will allow the USBR to initiate a joint federal-local investigation of solutions to the deteriorating water quality and management problems in the Salinas Valley ground water basin.

CWC No. 73A - Eastern Municipal Water District Loan (Riverside County). The Commission supports the loan application but makes no recommendation for funding pending approval of the application by the Commissioner of Reclamation.

CWC No. 73C - San Sevaine Creek Water Project Loan (San Bernardino County). The Commission supports the loan application but makes no recommendation for funding pending approval of the application by the Commissioner of Reclamation.

CWC No. 79A - Off-Stream Storage. The Commission supports the completion of the feasibility report of off-stream storage reservoirs south of the Delta on both the west side and the east side of the San Joaquin Valley.

CWC No. 80 - San Joaquin Valley Conveyance Study. The Commission supports the completion of the feasibility report, which will contain a preferred alternative for reducing the ground water overdraft problems in the San Joaquin Valley.

CWC No. 80A - Delta Water Management. The Commission supports funding for USBR's ongoing participation in this program with other Federal and State agencies, which has resulted in significant progress towards resolution of Delta issues.

CWC No. 85 - Refuge Water Supply. The recommended funding will be used by the USBR on site-specific ground water investigation on managed wetland areas.

FISH AND WILDLIFE SERVICE

CWC No. 107 - Coleman National Fish Hatchery. The Commission recommends additional funding for the highest priority facilities in the Coleman National Fish Hatchery development plan.

STATE OF CALIFORNIA—RESOURCES AGENCY **GEORGE DEUKMEJIAN, *Governor***

DEPARTMENT OF WATER RESOURCES
CALIFORNIA WATER COMMISSION
1416 NINTH STREET
SACRAMENTO

Stanley M. Barnes, Chairman - Visalia
Martin A. Matich, Vice Chairman - San Bernardino
Harold W. Ball - La Mesa
Katherine Dunlap - Los Angeles
Clair A. Hill - Redding
James J. Lenihan - Mountain View
James M. Stubchaer - Santa Barbara
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March 9, 1990

TO : ALL INTERESTED PARTIES

SUBJECTS : 1. Commission's Final Recommendations for FY 1990-91 Funding for Water and Flood Control Programs in California

2. Schedule for Submission of Recommendations to the Congress for FY 1990-91 Appropriations

Attached are the California Water Commission's final recommendations for appropriations for FY 1990-91 funding for water and flood control programs in California. These recommendations were adopted on March 2, 1990.

On Wednesday, April 4, 1990, the California Water Commission will present to the Congress, California's recommendations for funding for water and flood control programs in California. Clair Hill, Chairman of the Commission's Federal Appropriations Committee, will summarize the Commission's recommendations and coordinate the statements of the individual agencies. Our Washington, D.C., schedule is shown below.

1. California Caucus

The Commission proposes to continue its past procedure of a coordinated presentation of California's recommendations to the Congress. We have scheduled the California Caucus to review the testimony of California's witnesses.

Date : Tuesday, April 3, 1990
Time : 10:00 a.m. to 12:00 noon
Place : Hall of the States Building, Room 211
444 North Capitol Street, NW
Washington, D.C.

At the caucus, please be prepared to file with the Commission:

a. One copy of the statement you will present to the House Appropriations Committee.

b. One copy of the statement you will present to the Senate Appropriations Committee.

Commission staff will assemble a set of Statements for use by each Committee recorder.

2. California Congressional Delegation Reception

Date: Tuesday, April 3, 1990
Time: 5:30 p.m.
Invitations being mailed separately.

3. House Hearing

Date: Wednesday, April 4, 1990
Time: 10:30 a.m.
Place: 2362 Rayburn House Office Building

The Committee asks that you file 15 copies of your statement with the Committee staff at approximately 9:00 a.m. The testimony of the elected members of Congress will begin at 9:30 a.m.

4. Senate Hearing

Date: Wednesday, April 4, 1990
Time: 2:00 p.m.
Place: SD-192 Dirksen Senate Office Building

Your statement should be mailed so that copies reach Washington, D.C., no later than March 30. Please send 15 copies to:

Proctor Jones, Staff Assistant
Senate Committee on Appropriations
131 Dirksen Senate Office Building
Washington, DC 20510

5. Witness List

Please advise the Commission staff by telephone (916) 445-8750 or by letter of (a) the name and titles of the individuals who will attend the hearings in Washington, D.C., and (b) the projects they will support. This information should be received by Tuesday, March 20, 1990. Staff will prepare a draft witness list for use at the California Caucus.

6. Instructions from Senate and House Committees

The Senate and House Committees request that prepared statements be not longer that five single-spaced pages, typed only on one side of the sheet. The first page should include a summary of the request, indicating the projects involved and the specific action being proposed to the Committee.

The heading of your statement to the House Committee should read:

United States House of Representatives
Committee on Appropriations
Subcommittee on Energy and Water Development

The heading of your statement to the Senate Committee should read:

United States Senate
Committee on Appropriations
Subcommittee on Energy and Water Development
Honorable J. Bennett Johnston, Chairman

We will advise you if there are any changes in these arrangements.

Thank you for your cooperation.

Sincerely,

Stanley M. Barnes

Stanley M. Barnes
Chairman

Attachments

INDEX FOR TABULATION
CALIFORNIA WATER COMMISSION
FY 1990-91 FINAL RECOMMENDATIONS

CWC NO.	PROJECT AND COUNTY	AGENDA/PAGE
	CORPS OF ENGINEERS	
2	American and Sacramento Rivers	2
3	Calleguas Creek (Ventura)	1
3B	Northern California Streams Dry Creek (Placer, Sacramento)	2
6	Los Angeles County Drainage Area	2
7	Sacramento-San Joaquin Delta Investigation	1
9A	Inspection of Completed Works-Sacramento River Flood Control Project (0&M)	1
9D	Northern California Streams-Yuba River Watershed	1
9E	Sacramento River Restoration at Glenn-Colusa Irrigation District	3
9F	Northern California Streams-Yolo Bypass (Yolo)	1
9G	Cache Creek Basin (Lake)	1
9H	South Sacramento Urban Levees and Tributaries	1
11	San Joaquin River Basin	1
11-1	Caliente Creek (Kern)	1
11-2	Tule River	1
11-3	Kaweah River	1
11-6	Calaveras River	2
11-8	San Joaquin River Mainstream and Tributaries	2
11-9	Mokelumne River and Tributaries	2
11-10	Arroyo Pasajero (Fresno)	2
14	Santa Ana River and Orange County (Riverside, Orange, San Bernardino)	2
15	Santa Barbara County Streams - Lower Mission Creek	2
16	Walnut Creek Basin	2
18-1	Cache Creek - Settling Basin (Yolo)	3
18A	Guadalupe River (Santa Clara)	3
18B	Coyote and Berryessa Creeks (Santa Clara)	2
18C	San Lorenzo River (Santa Cruz) (2 stages)	2
18D	Upper Guadalupe River (Santa Clara)	2
21	Santa Ana River Mainstem	3
23	Carneros Creek (Santa Barbara)	3
24	Whitewater River Basin (Riverside)	2
25	Corte Madera Creek (Marin)	3
27	Dry Creek - Warm Springs Lake (Sonoma)	3
27A	Fairfield Vicinity Streams (Solano)	3
27D	Lower San Joaquin River and Tributaries (Snagging and Clearing Only)	3
28	Merced County Streams	3
29	New Melones Lake (Calaveras, Tuolumne, Stanislaus)	4
29A	Pajaro River	4
29B	Redbank and Fancher Creek (Fresno)	4
31	Sacramento River Bank Protection	4
32A	Sacramento River Flood Control Project	4
32B	Sacramento River Urban Levee Reconstruction	4
34	San Luis Rey River (San Diego)	4

CWC NO.	PROJECT AND COUNTY	AGENDA/PAGE
35	Santa Paula Creek (Ventura)	4
36	Sweetwater River (San Diego)	4
37	Walnut Creek (Contra Costa)	4
38	Wildcat and San Pablo Creeks (Contra Costa)	4
39A	Napa River Flood Control Project	3
40	San Rafael Canal	3
BUREAU OF RECLAMATION		
42	Sacramento River Division	5
47	Auburn-Folsom South Unit	5
50	San Luis Unit	5
60	Trinity River Restoration Program	5
61	Miscellaneous Project Programs	5
61-1	Delta Support Studies	5
61-2	Suisun Marsh Preservation Agreement	5
61-3	Temperature Control Device at Shasta Dam	5
62	San Felipe Division (San Benito, Monterey, Santa Cruz)	5
63	Bradbury Dam-Cachuma Project-Safety of Dams	5
64	Central Valley Project-Safety of Dams	5
64-3	O'Neill Dam	5
66	Salinas Valley Basin Water Management Plan	6
73A	Eastern Municipal Water District Water Facilities Plan	6
73C	San Sevaine Creek Water Project (San Bernardino, Riverside)	5
76A	United Water Conservation District (Ventura)	5
79A	Off-Stream Storage	6

CWC NO.	PROJECT AND COUNTY	AGENDA/PAGE
80	San Joaquin Valley Conveyance Study	6
80A	Delta Water Management Program	6
81	American River Folsom South Optimization Study	6
81A	San Joaquin River Resources Management Initiative	6
82	Operations and Maintenance Programs - Central Valley Project (Mid-Pacific Region)	7
82B	Cachuma Project	7
82C	Orland Project	7
82D	Solano Project	7
83	Small Project Integration with Central Valley Project	6
84	Environmental and Interagency Coordination Activities (Mid-Pacific)	6
84A	Minor Work in Connection with Completed Projects (Mid-Pacific)	6
84B	Technical Assistance to States (Mid-Pacific)	6
84C	Investigation of Existing Projects (Mid-Pacific)	6
85A	Refuge Water Supply	6
86	Land Resource Management Program (Mid-Pacific)	8
86A	Public Safety at Bureau Facilities (Mid-Pacific)	8
86B	Reclamation Law Administration (Mid-Pacific)	8
88	Paradox Valley Unit	6
89	Grand Valley Unit	6
90A	Lower Gunnison Basin Unit	6
91	Colorado River Water Quality Improvement Feasibility Investigation	7
91A	Colorado River Basin Salinity Control Project - Title I	7

CWC NO.	PROJECT AND COUNTY	AGENDA/PAGE
96	Indian Wells Valley Ground Water Project	7
97	Santa Ana Watershed Management Study	7
98	Colorado Riverfront Work and Levee System	7
99	Minor Work on Completed Projects (Lower Colorado)	7
99A	Environmental and Interagency Coordination Activities (Lower Colorado)	7
99B	Technical Assistance to States (Lower Colorado)	7
99C	Investigation of Existing Projects (Lower Colorado)	7
99D	Colorado River Recharge (Imperial)	7
100A	Parker Davis Project	8
100C	Yuma Area Projects (In California)	8
FISH AND WILDLIFE SERVICE		
107	Coleman National Fish Hatchery (Shasta, Tehama)	8

CALIFORNIA WATER COMMISSION
Federal Water and Flood Control Programs in California
for Fiscal Year 1990-91
(In Thousands of Dollars)

CWC NO.	PROJECT AND COUNTY	TOTAL FEDERAL COSTS	ESTIMATED COSTS THROUGH SEPTEMBER 30, 1989	APPROVED BY CONGRESS FY 1989-90	PRESIDENT'S BUDGET FY 1990-91	COMMISSION'S FINAL RECOMMENDATION FY 1990-91
	CORPS OF ENGINEERS GENERAL INVESTIGATIONS - Survey					
3	Calleguas Creek Ventura (No funds needed in FY 1990-91)	2,090	2,090	--	--	--
7	Sacramento - San Joaquin Delta Investigation	3,665	2,847	400	350	350
9A	Inspection of Competed Works Sacramento River Flood Control Project (Operations and Maintenance)	4,200	1,703	900	900	900
9D	Northern California Streams - Yuba River Watershed	1,250	500	375	375	375
9F	Northern California Streams - Yolo Bypass Yolo	1,250	--	150	400	400
9G	Cache Creek Basin Lake	--	--	--	--	500
9H	South Sacramento Urban Levees and Tributaries	--	--	--	--	500
11	**San Joaquin River Basin**					
11-1	Caliente Creek Kern	--	--	--	--	250
11-2	Tule River	750	600	90	64	154
11-3	Kaweah River	1,125	935	120	70	70

CWC NO.	PROJECT AND COUNTY	TOTAL FEDERAL COSTS	ESTIMATED COSTS THROUGH SEPTEMBER 30, 1989	APPROVED BY CONGRESS FY 1989-90	PRESIDENT'S BUDGET FY 1990-91	COMMISSION'S FINAL RECOMMENDATION FY 1990-91
11-6	Calaveras River	1,125	450	300	325	325
11-8	San Joaquin River Mainstream and Tributaries Investigation	500	--	--	--	500
11-9	Mokelumne River and Tributaries	1,225	--	245	300	300
11-10	Arroyo Pasajero Fresno	--	--	--	--	500
14	Santa Ana River and Orange County	1,810	1,365	255	270	270
16	Walnut Creek Basin	1,436	1,171	150	85	150
18C	San Lorenzo River Santa Cruz	1,152	768	300	98	98
18D	Upper Guadalupe River	1,178	458	320	300	300
24	Whitewater River Basin	340	--	--	--	--
	GENERAL INVESTIGATIONS - Preconstruction, Engineering and Design					
2	American and Sacramento Rivers	12,000	--	--	2,000	2,000
3B	Northern California Streams Dry Creek Placer, Sacramento	620	--	320	300	300
6	Los Angeles County Drainage Area	12,000	--	750	2,000	2,000
15	Santa Barbara County Streams Lower Mission Creek	1,470	--	275	550	550
18B	Coyote and Berryessa Creeks Santa Clara	2,000	814	800	424	424
18C	San Lorenzo River Santa Cruz (Funded also under General Investigations - Surveys)	550	--	--	100	100

CWC NO.	PROJECT AND COUNTY		TOTAL FEDERAL COSTS	ESTIMATED COSTS THROUGH SEPTEMBER 30, 1989	APPROVED BY CONGRESS FY 1989-90	PRESIDENT'S BUDGET FY 1990-91	COMMISSION'S FINAL RECOMMENDATION FY 1990-91
23	Carneros Creek Santa Barbara		550	--	--	--	300
39A	Napa River Flood Control Project		5,000	3,390	--	410	410
40	San Rafael Canal Marin		750	--	--	150	150
	CONSTRUCTION General						
9E	Sacramento River Restoration at Glenn-Colusa Irrigation District	Fed	4,500	--	--	--	300
		Non-Fed	1,500				
		Total	6,000				
18-1	Cache Creek - Settling Basin	Fed	14,700	1,093	5,500	2,100	2,100
		Non-Fed	6,700				
		Total	21,400				
18A	Guadalupe River Santa Clara	Fed	52,300	2,050	750	9,000	9,000
		Non-Fed	52,300				
		Total	104,600				
21	Santa Ana River Mainstem	Fed	908,000	25,643	20,000	65,000	65,000
		Non-Fed	451,000				
		Total	1,359,000				
25	Corte Madera Creek Marin	Fed	17,700	10,717	1,100	400	400
		Non-Fed	11,800				
		Total	29,500				
27	Dry Creek - Warm Springs Lake Sonoma		361,500	314,620	3,950	3,500	3,500
27A	Fairfield Vicinity Streams	Fed	13,800	9,480	2,945	2,160	2,160
		Non-Fed	22,500				
		Total	36,300				
27D	Lower San Joaquin River and Tributaries (Snagging and Clearing Only)	Fed	9,900	4,049	2,000	--	_[1]
		Non-Fed	1,900				
		Total	11,800				
28	Merced County Streams	Fed	70,500	8,902	1,100	1,900	1,900
		Non-Fed	30,400				
		Total	100,900				

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[1] The Commission recommends funds appropriated by Congress in FY 1989-90 for this project be used in FY 1990-91.

CWC NO.	PROJECT AND COUNTY		TOTAL FEDERAL COSTS	ESTIMATED COSTS THROUGH SEPTEMBER 30, 1989	APPROVED BY CONGRESS FY 1989-90	PRESIDENT'S BUDGET FY 1990-91	COMMISSION'S FINAL RECOMMENDATION FY 1990-91
29	New Melones Lake		394,500	361,151	--	2,000	5,000[2]
29A	Pajaro River	Fed Non-Fed Total	7,395 7,395 14,790	5,395	--	2,000	2,000
29B	Redbank and Fancher Creeks Fresno	Fed Non-Fed Total	50,400 16,800 67,200	6,688	11,300	7,500	7,500
31	Sacramento River Bank Protection	Fed Non-Fed Total	98,600 42,200 140,800	75,115	7,500	5,000	5,000
32A	Sacramento River Flood Control Project	Fed Non-Fed Total	82,215 97,830 180,045	74,395	730	1,050	1,050
32B	Sacramento River Urban Area Levee Reconstruction	Fed Non-Fed Total	21,800 21,800 43,600	1,200	3,870	13,470	13,470
34	San Luis Rey River San Diego	Fed Non-Fed Total	33,000 11,100 44,100	9,727	10,000	5,500	5,500
35	Santa Paula Creek Ventura (No funds needed in FY 90-91)	Fed Non-Fed Total	37,400 3,210 40,610	4,791	--	--	--
36	Sweetwater River San Diego	Fed Non-Fed Total	31,200 14,930 46,130	20,887	2,500	5,000	5,000
37	Walnut Creek Contra Costa	Fed Non-Fed Total	67,900 26,200 94,100	59,482	3,618	4,800	4,800
38	Wildcat and San Pablo Creeks Contra Costa	Fed Non-Fed Total	25,400 16,300 41,700	11,538	1,000	1,700	1,700
	TOTAL Corps of Engineers					$141,551	$147,556

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[2] The Commission recommends that $3 million of the $5 million recommended be used for the recreational facilities at New Melones Lake.

CWC NO.	PROJECT AND COUNTY		TOTAL FEDERAL COSTS	ESTIMATED COSTS THROUGH SEPTEMBER 30, 1989	APPROVED BY CONGRESS FY 1989-90	PRESIDENT'S BUDGET FY 1990-91	COMMISSION'S FINAL RECOMMENDATION FY 1990-91
	BUREAU OF RECLAMATION PROGRAMS						
42	Sacramento River Division		365,868	311,897	6,325	3,866	3,866
47	Auburn-Folsom South Unit		2,164,041	344,611	1,700	1,500	1,500
50	San Luis Unit (Includes funds for the Arroyo Pasajero Flood Control Project)		1,354,922	551,634	5,428	2,911	2,911
60	Trinity River Restoration Program		302,742	263,845	12,280	7,362	7,362
61	**Miscellaneous Project Programs** (Includes $500 for Delta Support Studies and $1,900 for Suisun Marsh Preservation Agreement)		--	--	7,850	2,400	2,400
61-1	Delta Support Studies *(An additional $1,900 included in CWC 82 CVP Operations and Maintenance)		--	--	1,900	*500	*500
61-2	Suisun Marsh Preservation Agreement		--	--	5,150	1,900	1,900
61-3	Temperature Control Device at Shasta Dam		--	299,164	800	--	10,640
62	San Felipe Division		349,570	299,118	2,600	1,715	1,715
63	Bradbury Dam - Cachuma Project Safety of Dams		50,000	--	100	280	280
64	**Central Valley Project - Safety of Dams**						
64-3	O'Neill Dam		2,250	--	45	1,980	1,980
	LOAN PROJECTS						
73C	San Sevaine Creek Water Project San Bernardino, Riverside	Fed Non-Fed Total	28,600 14,000 42,600	--	--	--	--
76	United Water Conservation District Ventura	Fed Non-Fed Total	18,156 826 18,982	6,909	6,247	--	--

CWC NO.	PROJECT AND COUNTY		TOTAL FEDERAL COSTS	ESTIMATED COSTS THROUGH SEPTEMBER 30, 1989	APPROVED BY CONGRESS FY 1989-90	PRESIDENT'S BUDGET FY 1990-91	COMMISSION'S FINAL RECOMMENDATION FY 1990-91
	SPECIAL INVESTIGATIONS (Mid-Pacific Region)						
66	Salinas Valley Basin Water Management Plan		--	--	--	--	180
79A	Off-Stream Storage		1,059	908	151	--	150
80	San Joaquin Valley Conveyance Study		1,468	1,461	8	--	50
80A	Delta Water Management Program		1,259	1,177	82	--	350
81	American River Folsom South Optimization Study		250			50	50
81A	San Joaquin River Resource Management Initiative (*An additional $300 included in CWC 82 CVP Operations and Maintenance)		1,800	--	--	*200	*200
83	Small Project Integration with CVP		190	--	--	60	60
84	Environmental and Interagency Coordination Activities		Continuing	12,708	613	543	543
84A	Minor Work in Connection with Completed Projects		Continuing	184	25	125	125
84B	Technical Assistance to States		Continuing	1,075	246	200	200
84C	Investigation of Existing Projects		Continuing	21	27	67	67
85	Refuge Water Supply		506	493	13	--	200
86	Eastern Municipal Water District Water Facilities Plan	Fed Non-Fed Total	31,000 14,000 45,000	--	--	--	--
	COLORADO RIVER SALINITY CONTROL PROJECT[3]						
88	Paradox Valley Unit		87,280	53,374	2,461	3,380	3,380
89	Grand Valley Unit		263,854	69,522	8,239	14,732	14,732
90A	Lower Gunnison Basin Unit		169,338	275	2,500	4,726	4,726

[3] The Commission supports the recommendations of the Colorado River Board for projects CWC Nos. 88 - 91A.

CWC NO.	PROJECT AND COUNTY	TOTAL FEDERAL COSTS	ESTIMATED COSTS THROUGH SEPTEMBER 30, 1989	APPROVED BY CONGRESS FY 1989-90	PRESIDENT'S BUDGET FY 1990-91	COMMISSION'S FINAL RECOMMENDATION FY 1990-91
91	Colorado River Water Quality Improvement Feasibility Investigation (Upper and Lower Basin)	8,300	6,963	1,235	135	135
91A	Colorado River Basin Salinity Control Project - Title I ($143 in California)	481,536	352,394	19,060	14,295	14,295
	OTHER PROGRAMS (Lower Colorado Region)					
96	Indian Wells Valley Ground Water Project Kern, San Bernardino, Inyo	525	--	175	175	175
97	Santa Ana Watershed Management Study	500	122	138	99	99
98	Colorado Riverfront Work and Levee System ($1323 in California)	118,403	58,562	8,400	6,300	6,300
99	Minor Work on Completed Projects ($51 in California)	Continuing	--	45	107	107
99A	Environmental and Interagency Coordination Activities ($265 in California)	Continuing	9,028	500	440	440
99B	Technical Assistance to States ($105 in California)	Continuing	424	194	175	175
99C	Investigation of Existing Projects ($52 in California)	686	--	80	90	90
99D	Colorado River Recharge Imperial, CA and Henderson, NV Units ($18 in California)	280	--	100	30	30
	OPERATIONS AND MAINTENANCE (MidPacific Region)					
82	Central Valley Project	Continuing	--	49,953	64,033	64,033
82B	Cachuma Project	--	--	172	185	185
82C	Orland Project	--	--	133	185	185
82D	Solano Project	--	--	1,359	1,763	1,763

CWC NO.	PROJECT AND COUNTY	TOTAL FEDERAL COSTS	ESTIMATED COSTS THROUGH SEPTEMBER 30, 1989	APPROVED BY CONGRESS FY 1989-90	PRESIDENT'S BUDGET FY 1990-91	COMMISSION'S FINAL RECOMMENDATION FY 1990-91
86	Land Resource Management Program	--	--	282	500	500
86A	Public Safety at Bureau Facilities	--	--	250	600	600
86B	Reclamation Law Administration	--	--	1,800	1,700	1,700
	OPERATIONS AND MAINTENANCE (Lower Colorado Region)					
100A	Parker-Davis Project ($906 in California)	--	--	1,251	3,484	3,484
100C	Yuma Area Projects ($9,429 in California)	--	--	8,871	22,995	22,995
	TOTAL - Bureau of Reclamation				**$162,746**	**$177,258**
	TOTAL - Corps of Engineers and Bureau of Reclamation (Approximately $247,843 in California)				**$304,257**	**$324,814**
	FISH AND WILDLIFE SERVICE					
107	Coleman National Fish Hatchery	12,887	2,700	--	1,500	5,300

4/04/90

After Review of March 12, 1990
Recommendations for Additional Funds

9G Probably justified but will not lead to a project under present political climate

9H City plans to go ahead with this study with own funds. This is a needed project.

11-2 Presidents budget OK to complete report. Add-on not required.

16 ~~15~~ Same as above.

Most environmental sensitive projects

63-1 Shasta Dam Temperature Control essential to protect fisheries should have been done long ago.

9-E Correct river gradient so district and Fish and Games can determine correct fish problems

107 Coleman National Fish Hatchery has serious disease problems and a failing diversion dam.

STATE OF CALIFORNIA—RESOURCES AGENCY
GEORGE DEUKMEJIAN, Governor

DEPARTMENT OF WATER RESOURCES
CALIFORNIA WATER COMMISSION
1416 NINTH STREET
SACRAMENTO

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CALIFORNIA WATER COMMISSION
Recommendations for Additional Funds
FY 1990-91 Appropriations

March 12, 1990

The California Water Commission supports funding for all projects of the Corps of Engineers and the Bureau of Reclamation in the President's budget. The projects listed below merit special consideration. The Commission recommends additional appropriations for these projects:

CWC NO.	PROJECT	PRESIDENT'S BUDGET	COMMISSION'S RECOMMENDATION
CORPS OF ENGINEERS			
	Northern California Streams		
9E	Sacramento River Restoration at Glenn-Colusa Irrigation District	--	$ 300,000
9G	Cache Creek Basin (Lake County)	--	500,000
9H	South Sacramento Urban Levees and Tributaries	--	500,000
	San Joaquin River Basin		
11-1	Caliente Creek (Kern County)	--	250,000
11-2	Tule River (Tulare County)	$ 64,000	154,000
11-8	San Joaquin River Mainstem and Tributaries	--	500,000
11-10	Arroyo Pasajero (Fresno County)	--	500,000
16	Walnut Creek Basin (Contra Costa County)	85,000	150,000
23	Carneros Creek (Santa Barbara County)	--	300,000
27D	Lower San Joaquin River - Clearing and Snagging *(Use remaining FY 1989-90 funds in FY 1990-91)	--	*
29	New Melones Lake (Calaveras, Tuolumne, Stanislaus Counties)	2,000,000	5,000,000
BUREAU OF RECLAMATION			
61-3	Shasta Dam Temperature Control Device (Shasta County)	--	$10,640,000
66	Salinas Valley Water Resource Management Plan (Monterey County)	--	180,000
73A	Eastern Municipal Water District Loan (Riverside County)	--	Support
73C	San Sevaine Creek Water Project Loan (San Bernardino County)	--	Support
79A	Off-Stream Storage	--	150,000
80	San Joaquin Valley Conveyance Study	--	50,000
80A	Delta Water Management Program	--	350,000
85	Refuge Water Supply	--	200,000
FISH AND WILDLIFE SERVICE			
107	Coleman National Fish Hatchery	1,500,000	5,300,000
	TOTALS	$3,649,000	$25,024,000
	TOTAL RECOMMENDED INCREASE		$21,375,000

CORPS OF ENGINEERS

Northern California Streams

CWC No. 9E - Sacramento River Restoration at Glenn-Colusa Irrigation District. The $300,000 will allow the Corps of Engineers to complete the preconstruction engineering and design and the necessary environmental documentation, and to initiate construction.

CWC No. 9G - Cache Creek Basin (Lake County). The Corps of Engineers investigation of the Cache Creek Outlet Project has determined that the project is not economically justified. The California Water Commission supports the recommendation of Lake County that the Corps of Engineers undertake an investigation of alternative projects to reduce flood impacts around Clear Lake. The $500,000 appropriation will allow the Corps to make a reconnaissance investigation of the alternative projects.

CWC No. 9H - South Sacramento Urban Levees and Tributaries. The City of Sacramento is urging that a flood control project to protect the South Sacramento area be included as an integral part of the critically needed regional flood control project. The South Sacramento Urban Levees and Tributaries study will permit inclusion of the identified project in an overall comprehensive flood control project of the entire Sacramento area. If planning for this southern portion does not proceed with the proposed regional project, large areas of the Sacramento metropolitan area will be exposed to a high risk of flooding after the rehabilitation of the Sacramento and American River levees is completed. The City of Sacramento will cost-share on any feasible, affordable project identified.

San Joaquin River Basin

CWC No. 11-1 - Caliente Creek (Kern County). Kern County has determined that the presently proposed project is not financially feasible. The County is considering other alternatives to protect against repetitive flooding. Discussions are underway with the Corps of Engineers to determine which project configurations Kern County and the Corps should pursue. Kern County and the Corps will then negotiate and implement a cost-sharing agreement to do the feasibility level work. The Commission supports funding for the Corps to initiate the investigation.

CWC No. 11-2 - Tule River (Tulare County). The President's budget contains $64,000 for the Tule River feasibility investigation. The Corps of Engineers and the local sponsoring agency, the Lower Tule River Irrigation District, have identified additional costs for the Corps of Engineers in the amount of $90,000. The project will be cost-shared by the Lower Tule River Irrigation District and other local interests.

CWC No. 11-8 - San Joaquin River Mainstem and Tributaries Investigation. The Commission supports the State Reclamation Board and the many agencies along the San Joaquin River in urging appropriations for the Corps of Engineers to initiate a reconnaissance study of the San Joaquin River from Gravely Ford to the junction with the Merced River, including the bypass systems, and to take such remedial actions as appropriate so the system will convey design flood flows.

CWC No. 11-10 - Arroyo Pasajero (Fresno County). The Commission is supporting a request of the Department of Water Resources and the State Water Contractors that the Corps of Engineers undertake a one-year reconnaissance study of the Arroyo Pasajero flood control problem. Prior to construction of the California Aqueduct, flood waters overflowed the defined channels during significant storms and spread overland toward the San Joaquin Valley trough. This portion of the California Aqueduct is jointly owned by the Department of Water Resources and the Bureau of Reclamation (USBR) and was constructed by USBR. Current flood protection facilities have proved inadequate. Presently the Arroyo Pasajero basin flood control facilities cannot accommodate a ten-year flood unless emergency measures are taken. The Commission believes construction of the necessary flood control facilities is urgent. The present DWR-USBR program focuses primarily on flooding and siltation problems at and near the California Aqueduct, while the proposed Corps studies would focus on flood measures upstream including detention reservoirs on tributary streams. The Commission has requested that the Department and USBR advise the Commission in writing that the joint DWR-USBR ongoing flood control program will not be delayed because of the Corps' proposed reconnaissance investigation.

CWC No. 16 - Walnut Creek Basin (Contra Costa County). For several years, the Corps of Engineers has been coordinating its planning efforts with Contra Costa County to develop conceptual plans acceptable to the public. The preliminary results indicate the potential federal interest in the plans for flood control; however, additional feasibility studies have been determined to be necessary to formulate and recommend a plan of improvement. Additional funds requested by the Commission will be used to complete feasibility studies and prepare a feasibility report. Funding for this additional effort is being cost-shared with Contra Costa County Flood Control and Water Conservation District.

CWC No. 23 - Carneros Creek (Santa Barbara County). The Commission supports the recommendation of Santa Barbara County that the Corps proceed with the preconstruction engineering and design phase of the project. The project has been substantially reduced in scope. The County of Santa Barbara is supporting the re-authorization of this project to reflect the new scope of the project.

CWC No. 27D - Lower San Joaquin River (Clearing and Snagging). The needed work includes selective channel clearing and removal of debris and bars to restore channel capacity to historic levels on the San Joaquin River. The next phase of work will be covered in a joint EIS-EIR, revised and reduced in scope to those areas of work where local agreement has been reached. The California Water Commission recommends that the funds appropriated by Congress in FY 1989-90 for this project be used in FY 1990-91.

CWC No. 29 - New Melones Lake. The Corps of Engineers failed to include in its budgets in the past two years funds for the scaled-down recreational facilities, which the local counties reluctantly accepted in a 1988 compromise. However, the compromise recreational facilities are considered to be a minimum level of additional development necessary to relieve only the worst hardships imposed on local counties in order to handle the influx of recreationists attracted by the 11-year-old lake. The Counties of Calaveras and Tuolumne supported the Federal Government through the statewide ballot referendum, the Environmental Impact Report, 13 continuous years of construction, court cases all the way to the US Supreme Court, and the controversy surrounding the filling of the reservoir on the premise that extensive recreational facilities would be built to assist the local economy and to provide the necessary infrastructure for the influx of 3 million visitors per year.

The Commission once again supports the request of the Counties of Calaveras and Tuolumne and urges Congress to appropriate an additional $3 million to build the compromise recreational facilities at New Melones Lake at the earliest possible time.

BUREAU OF RECLAMATION

CWC No. 61-3 - Shasta Dam Temperature Control Device. In 1989, the winter run Chinook salmon was included as a protected species under both the California State Endangered Species Act and the Federal Threatened Species Act.

The proposed temperature control device will permit impounded water in the reservoir behind Shasta Dam to be released from different elevations. Work on the temperature control device is well underway. Design specifications are anticipated to be completed in December 1990. FY 1990-91 funding is needed to ensure that the temperature control device is operational at the earliest possible time to maximize benefits to the winter run Chinook salmon. An appropriation for $10,640,000 in FY 1990-91 will be used to award the contracts and initiate construction activities. The California Water Commission is supporting S1857 (Wilson), the Upper Sacramento River Fishery Resources Restoration Act of 1990. S1857 would authorize the temperature control device and provide that the State contribute 25 percent of the cost of the facility.

CWC No. 66 - Salinas Valley Water Resource Management Plan (Monterey County). The Commission supports an appropriation of $180,000. Funds will allow USBR to initiate a general investigation of solving the water quality and water management problems in the Salinas Valley ground water basin. The ground water supply is experiencing overdraft conditions and is threatened by sea water intrusion. The investigation would be cost-shared on a 50/50 basis by the Monterey County Flood Control and Water Conservation District.

CWC No. 73A - Eastern Municipal Water District Loan (Riverside County). The proposed project will construct a reclaimed water distribution system, enhance and expand wetland areas, improve irrigation to agricultural lands, and provide ground water recharge for the San Jacinto River Basin. The loan application is being reviewed by the Lower Colorado River Region of USBR. The California Water Commission supports the Small Reclamation Project Loan application, but makes no recommendation for funding pending the approval of the loan by the Commissioner of Reclamation.

CWC No. 73C - San Sevaine Creek Water Project Loan (San Bernardino County). The proposed San Sevaine Creek Water Project is a USBR project under its Small Reclamation Project Loan Program. The project will provide water conservation measures and help to reduce the flood flows. There will be an average of approximately 25,000 acre-feet per year of conservable runoff. This water conservation aspect will be of benefit to approximately 14,000 acres of agricultural preserves. The loan has been submitted to the Lower Colorado River Region of USBR. The local sponsor, San Bernardino County, anticipates that the loan will be in the Office of the Commissioner of Reclamation within a few weeks. The Commission supports the project, but makes no recommendation for funding pending the approval of the loan report by the Commissioner.

CWC No. 79A - Off-Stream Storage. USBR's FY 1989-90 budget in the amount of $61,000 is inadequate to complete the evaluation and feasibility of off-stream storage reservoirs south of the Delta on both of the west side and the east side of the San Joaquin Valley. The Commission supports the completion of the feasibility report which is nearing completion after many years. An appropriation of $150,000 would allow USBR to complete the feasibility report.

CWC No. 80 - San Joaquin Valley Conveyance Study. The feasibility report is at a stage where it can be released as soon as the final comments are received from the local and federal agencies. It is a report which has been in progress for the past six years and will contain a preferred alternative. According to the Mid-Valley Water Authority, the preferred alternative will be a connection with the Cross Valley Canal and the Friant-Kern Canal. The Commission supports an appropriation of $50,000 to allow USBR to complete the feasibility report.

CWC No. 80A - Delta Water Management. The Department of Water Resources and USBR have been coordinating studies on the ongoing Delta Water Management Program. This program has resulted in significant progress toward the resolution of Delta issues. USBR has played a key role by providing staff expertise in a number of areas, including resolution of a complex lawsuit for the South Delta Water Agency; improvement of Delta water quality; reduction in fisheries impacts; and an improvement in the capacity to bank surplus winter flows through off-stream storage, conjunctive use, refuge water and other system organization studies. As a result, there has been significant advancement in the areas of environmental documentation, compliance with federal regulatory permit procedures, development of alternatives, public involvement, and growth in local support for Delta planning programs. The Commission supports funding for USBR's ongoing participation in the program.

CWC No. 85 - Refuge Water Supply. The study and investigations began in FY 1985-86. A "Report on Refuge Water Supply Investigations, Central Valley Hydrologic Basin" is complete. The report identifies water needs and provides alternative plans to deliver various levels of water to a total of 15 federal, state and privately owned, managed wetlands in the Central Valley. The $200,000 recommended for appropriation by Congress would be used to completed a scope of work for site-specific ground water investigation on each of the 15 managed wetland areas and to begin data gathering and monitoring activities. The information developed by the investigations would enable USBR to make decisions on the most efficient use of water resources for the areas.

FISH AND WILDLIFE SERVICE

CWC No. 107 - Coleman National Fish Hatchery. The Commission commends the Fish and Wildlife Service for including for the first time, funds to initiate rehabilitation of the Coleman National Fish Hatchery, and supports the $1.5 million in the President's budget. The Commission also recommends an appropriation of an additional $3.8 million to replace the food storage buildings, complete the water ozone system to 20,000 gallons per minutes, and replace the flood-damaged fish barrier dam on Battle Creek. The projects recommended are consistent with highest priorities in the Coleman development plan.

Mr. Hall. Thank you, Clair.

Mr. Chairman, I had the pleasure of coordinating some of your meetings when you were out with Mr. Myers to look at the Kesterson area a while back.

It's a pleasure to be before your subcommittee. Let me also thank Mr. Fazio for his leadership in developing concensus on the serious flood problems in Sacramento.

And with that, let me move on with our testimony.

There are 25 projects in the President's budget that we have supported and been involved with, and we are gratified to see that.

In addition, there are five projects in the central valley that are germane to flood control. That is the Reclamation Board's responsibility, which I will speak on briefly.

You have already heard from Congressman Lehman on the first one. That is the San Joaquin River Mainstream and Tributaries Investigation.

This is, as Mr. Lehman indicated, a basin-wide approach, and we are asking $500,000 of the Corps to help identify solutions to some of the complicated flood control problems on the San Joaquin.

Secondly, we are asking $300,000 for the Corps to design a restoration project on the Sacramento River at the Glenn-Colusa Irrigation District intake. This is an important project, both for valuable fisheries and some important farmland in Northern California.

And thirdly, Caliente Creek, which Congressman Thomas spoke of, is a creek with some serious flooding and sedimentation problems.

As Mr. Thomas indicated, there has been a study, and we are asking for a re-study, slightly different look at a serious problem.

It's got strong local support, and it's got a very innovative and, I think, precedent setting cost-sharing agreement attached to it. We are asking $250,000 for that.

On Cache and Clear Lake, Lake County has again a serious problem with flooding around Clear Lake. Some previous alternatives that have been studied have not been feasible. The county is asking for the Corps to conduct a reconnaissance study there, and we are supporting their request for $500,000.

And finally, we are asking for the Corps of Engineers to get involved in a very sticky problem on Arroyo Pasajero. Again, Congressman Lehman mentioned that in his testimony.

It's an ephemeral stream when it doesn't run off, but when it runs, it has a lot of sediment in it.

It threatens a lot of communities with flooding, and it also dumps a lot of naturally occurring asbestos into the California aqueduct, which is a shrinking drinking water supply for much of California.

With that, let me thank the subcommittee for your help in the past and your continued support.

[The statement of Stephen Hall follows:]

STATE OF CALIFORNIA
THE RESOURCES AGENCY
THE RECLAMATION BOARD

RECOMMENDATIONS
FEDERAL FLOOD CONTROL PROJECTS

IN THE

CALIFORNIA CENTRAL VALLEY

FISCAL YEAR 1990-91

Presented to

UNITED STATES SENATE
COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
Honorable J. Bennett Johnston, Chairman

and

UNITED STATES HOUSE OF REPRESENTATIVES
COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
Honorable Tom Bevill, Chairman

by

Stephen K. Hall, Vice-President
Raymond E. Barsch, General Manager

April 4, 1990

THE RECLAMATION BOARD'S RECOMMENDATIONS FOR FEDERAL FLOOD CONTROL PROJECTS

1990-91 Summary in $1,000

Corps of Engineers' Projects	Page	Board Recommends	President's Budget
I. Surveys			
A. Northern California Streams			
-- Yolo Bypass	2	400	400
-- Yuba River Watershed	2	375	375
-- Cache Creek - Clear Lake	2	500	0
-- South Sac. Urban Levees & Tribs.	3	500	--
B. Sacramento-San Joaquin Delta Inv.	3	350	350
C. San Joaquin River Basin			
-- Caliente Creek	4	250	0
-- Tule River	4	154	64
-- Kaweah River	4	70	70
-- Calaveras River	4	325	325
-- San Joaquin River Mainstem & Tributaries	4	500	0
-- Mokelumne River and Tributaries	4	300	300
-- Arroyo Pasajero	4	500	--
II. General Investigations (PE&D)			
A. American and Sacramento Rivers	4	2,000	2,000
B. Dry Creek	5	300	300
III. Construction			
A. Cache Creek Settling Basin	6	2,100	2,100
B. Redbank and Fancher Creeks	6	7,500	7,500
C. Fairfield Vicinity Streams	6	2,160	2,160
D. Lower San Joaquin River and Tribs.	7	*	0
E. Merced County Streams	7	1,900	1,900
F. Sacramento River Bank Prot. Proj.	7	5,000	5,000
G. Sacramento River Flood Cont. Proj.	7	1,050	1,050
H. Sacramento River Urb. Area Levee Recon.	8	13,470	13,470
I. Sacramento R. Restoration at Glenn-Colusa ID	8	300	0
IV. Operations and Maintenance			
A. Inspection of Completed Works - Sacramento River Flood Cont. Proj.	8	900	900
U. S. Bureau of Reclamation Projects			
A. Auburn-Folsom South Unit	9	1,500	1,500

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*The Reclamation Board recommends that funds appropriated by Congress in FY 1989-90 for this project be used in FY 1990-91.

THE RECLAMATION BOARD'S RECOMMENDATIONS

The Reclamation Board, as the State agency which furnishes required local assurances for federal levee and channel projects in California's Central Valley, respectfully submits this statement of support for the following projects.

While all projects are important to the health, safety, and well-being of Central Valley residents, the surveys and projects described as follows are of particular importance to The Reclamation Board.

I. Surveys

A. Northern California Streams

This survey, authorized in 1958 and 1962, is a study of the Sacramento River and its tributaries, in regard to flood control measures.

Yolo Bypass

This reconnaissance level investigation was initiated in 1989 by the conference report. This investigation will provide information for the existing levees and other flood control facilities on the west side of the bypass as well as the adjacent streams including Cache Creek, Putah Creek, and Willow Slough in Yolo and Solano Counties. Appropriate measures to provide higher levels of flood protection for the Cities of Woodland and Davis will also be studied. The Reclamation Board supports $400,000 for this investigation.

Yuba River Watershed

A one-year reconnaissance-level study of alternatives for flood control and related purposes in the Yuba River watershed should be completed by March 1990. The 1986 flood and the resulting levee failure made everyone aware that much more information is needed to provide a solution to the problems in this area. The Reclamation Board supports $375,000 to initiate the feasibility phase of the study.

Cache Creek - Clear Lake

The Corps of Engineers has completed its feasibility report regarding water resources development in the Cache Creek Basin. The report investigated enlarging the outlet channel of Clear Lake in the upper basin to reduce flooding of development around the Lake. This alternative was found to have a benefit cost ratio of less than 1 to 1.

The fact remains that flooding is a real problem at Clear Lake and Lake County has asked the Corps of Engineers to undertake an investigation to look at the feasibility of other alternative projects.

The Reclamation Board supports $500,000 for this needed effort.

South Sacramento Urban Levees and Tributaries

It has come to The Reclamation Board's attention that the levees on the South Sacramento tributary streams would not have adequate freeboard to handle the predicted flows. This investigation will provide information which may lead to a feasible solution to the problems on Elder Creek, Unionhouse Creek, and Beach Lake. The results of this investigation will be integrated into the Corps of Engineers' ongoing project in and around the Sacramento Area.

The Reclamation Board supports $500,000 for this investigation.

B. Sacramento-San Joaquin Delta Investigation

The study area is located in Sacramento, Yolo, San Joaquin, Contra Costa, and Solano Counties and extends from the southern limits of the City of Sacramento, the City of Stockton, and west to Suisun Bay. The area consists of about 700,000 acres of land segregated into some 100 tracts and islands, bounded by interconnecting waterways, which are confined by 1,100 miles of levees which normally prevent the lands from being inundated by high tides or high stages. Lands within these levees are among the most productive agricultural lands in the State. The survey considers flood control, associated recreation and environmental problems, Delta water transfer and salinity intrusion problems. A critical need for levee rehabilitation throughout the Delta exists.

Current activities include coordination with the U. S. Bureau of Reclamation and State Department of Water Resources to formulate the comprehensive plan. The Reclamation Board supports $350,000 for this investigation.

C. San Joaquin River Basin

This survey, authorized in 1964 and initiated in 1968, encompasses the southern portion of the Central Valley, including part of the Delta-Central Sierra area and all of the San Joaquin and Tulare Lake Basins. The study will investigate the problems of flood control, irrigation, municipal water supply, power, recreation, fish and wildlife, and water quality. The study area is the site of many complex water supply and water transportation problems. Flooding is a major problem in the study area. During the severe floods of 1969, 1983, and 1986, the area experienced extensive damages. Projects to be considered include dams and reservoirs, stream diversion, bank protection, and levee and channel improvement.

The San Joaquin River Mainstem and Tributaries Investigation would be a one-year reconnaissance-level study to investigate sources of sediment transport, flooding and other problems on the San Joaquin River between Friant Dam and the Delta, including the bypass system. Also, all the eastside tributary streams that bring floodwaters and debris into this area would be investigated to determine what alternative solutions are available.

There is a flood problem associated with Arroyo Pasajero and Cantua Creek watersheds near Coalinga, California in southwest Fresno County. Updated hydrologic and sedimentation studies now reveal that both the estimated sediment loads and storm volumes are several times greater than original design estimates. There are several public facilities in the floodplain including Lemoore Naval Air Station, Interstate 5, and Highway 198. The town of Huron is subject to flood damage as well as the California Aqueduct.

The Reclamation Board supports the following funding:

Caliente Creek	-	$250,000
Tule River	-	154,000
Kaweah River	-	70,000
Calaveras River	-	325,000
San Joaquin Mainstem and Tributaries	-	500,000
Mokelumne River and Tributaries	-	300,000
Arroyo Pasajero	-	500,000

II. General Investigations (PE&D)

A. American and Sacramento Rivers

The Reclamation Board and the Department of Water Resources are acting as the local sponsor for the

Feasibility Study on the American River Watershed which is scheduled to be completed in the Fall of 1990. The Feasibility Cost Sharing Agreement was signed in June, 1988. The nonfederal share is being funded by The Reclamation Board, the Department of Water Resources, Sacramento County, Placer County, Sutter County, City of Sacramento, Reclamation District 1000, and the American River Flood Control District.

The Reclamation Board is the nonfederal sponsor for the feasibility study on the Sacramento Metropolitan Area Investigation which is also scheduled for completion in the fall of 1990. These projects have been combined, and will be constructed as one project. The Reclamation Board passed a resolution on February 16, 1990 directing the Corps of Engineers to concentrate on the Alternative that would lead to an Expandable Flood Control facility at or near the Auburn Dam site and to raise the levees around the Natomas area. The Reclamation Board supports $2,000,000 to begin the design of this critically needed project.

B. Dry Creek

A feasibility report on Dry Creek was completed in January 1989. Funds for this study are being shared on a 50-50 basis with the City of Roseville. Serious flooding occurred in Roseville and Rio Linda in February 1986 emphasizing the need for flood control measures in this area. The Board supports $300,000 for preconstruction engineering and design on this project.

III. Construction

A. Cache Creek Settling Basin

The Corps of Engineers has completed its feasibility report for the Cache Creek Settling Basin. The report recommends enlarging and raising the levees around the existing Settling Basin to increase the Basin's sediment storage capacity. The Settling Basin is now full and is affecting the flood-carrying capacity of the Yolo Bypass. The current funding will be for the first year's construction.

The Board supports $2,100,000 to continue the construction of this project.

B. Redbank and Fancher Creeks

The Corps of Engineers has completed its General Design Memorandum. The report recommends single-purpose flood control improvements on Redbank, Fancher, and Pup Creeks and Alluvial Drain; and dual-purpose flood control and recreation facilities on Big Dry Creek. The plan provides for enlargement of the existing Big Dry Creek Dam and Reservoir, a new dam on Fancher Creek, and detention basins on Redbank and Pup Creeks and Alluvial Drain.

The project was authorized for construction by the Water Resources Development Act of 1986, and The Reclamation Board supports $7,500,000 for continuing construction of this project.

C. Fairfield Vicinity Streams

The project is located in the vicinity of the Cities of Fairfield and Suisun in Solano County; the drainage basin comprises 45.8 square miles. There are five streams on which improvements are to be constructed. These are Ledgewood, Laurel, Union Avenue, Pennsylvania, and McCoy Creeks. The project as presented in the Corps of Engineers' Phase II GDM included channel improvements and diversion of three creeks, levees on two of the creeks, and construction of recreation facilities.

In May 1986, The Reclamation Board signed the assurance agreement so that this project could move to construction. The first and second phases have been completed. Phase III is under construction. The Reclamation Board supports $2,160,000 for completion of this project.

D. Lower San Joaquin River and Tributaries

The Lower San Joaquin River was authorized in 1944 and by the 1983 and 1988 Supplemental Appropriations Acts. The existing project completed in 1968 consists of channels, levees, and riverbank revetment from Friant Dam on the San Joaquin River to Stockton, a distance along the River of about 225 miles.

The needed work includes selective channel clearing and removal of debris and bars to restore channel capacity to historic levels on the San Joaquin River. Initial work in the Eastside Bypass has been done which was identified as an emergency situation. The next phase of the work will be covered in a joint EIS-EIR which is being revised and scaled down to those areas of work where local agreement has been reached.

The Reclamation Board recommends that funds appropriated by Congress in FY 1989-90 for this project be used in FY 1990-91.

E. Merced County Streams

This project, authorized in 1970, will provide flood protection for Castle Air Force Base, the City of Merced, and adjacent suburban and agricultural lands. The assurance agreements have been signed and construction should begin in 1990.

The Reclamation Board supports $1,900,000 for continuing the construction of this project.

F. Sacramento River Bank Protection Project

The project, authorized in 1960, is a long-range federal-State effort, aimed at preserving the existing project levee system of the Sacramento River. These existing levees offer flood protection along 192 miles of the Sacramento River between Collinsville (in the Delta) to Chico Landing. The Sacramento River Bank Protection Project work consists of providing some form of bank stabilization at those points which are identified each year as the most critical.

The Reclamation Board supports $5,000,000 for construction of the Sacramento River Bank Protection Project.

G. Sacramento River Flood Control Project

This project was authorized in 1917 and modified by various Flood Control and/or River Harbor Acts in 1928, 1937, and 1941.

The project comprises a comprehensive system of levees, overflow weirs, drainage pumping plants, and flood bypass channels, extending along the Sacramento River from Collinsville to Chico Landing.

The funds in the President's Budget are necessary to complete two items: 1) final design for the levees along the Colusa Basin Drain; and 2) finish design for the levee restoration work on the levees in the Marysville-Yuba City area.

The Reclamation Board supports $1,050,000 for this program.

H. Sacramento River Urban Area Levee Reconstruction

This project was authorized in 1917 and modified by various Flood Control and/or River Harbor Acts in 1928, 1937, and 1941.

This program would allow reconstruction of 32 miles of the 110 miles of levees which protect the Sacramento urban area. This program will be cost shared with a number of local agencies in the Sacramento Area. The Reclamation Board will sign the Local Cooperation Agreement with the Corps of Engineers.

The Reclamation Board supports $13,470,000 for continuing the construction of this project.

I. Sacramento River Restoration at Glenn-Colusa Irrigation District

This project involves restoration of the hydraulic characteristics of the main channel of the Sacramento River. The Corps of Engineers is considering Engineering and Design of works to restore the elevation of the Sacramento River in the vicinity of the Glenn-Colusa Irrigation District intake to conditions existing prior to the flood of 1970. The Reclamation Board supports $300,000 for construction of this project.

IV. Operations and Maintenance

A. Inspection of Completed Works - Sacramento River Flood Control Project

The Reclamation Board is concerned about the long-term integrity of the Sacramento River Flood Control System. The project is an integral part of the State's flood control plan and protects over one million people and billions of dollars in property. A break in the project levee on the Yuba River flooded thousands of homes in February 1986, and other areas within the project were seriously stressed.

This geotechnical work performed by the Corps of Engineers determines where design deficiencies exist within the levee system. The Reclamation Board supports $900,000 for this phase of the program to prepare initial appraisal studies for 250 miles of levees in the Sacramento River Flood Control Project levee system.

U. S. Bureau of Reclamation Projects

A. Auburn-Folsom South Unit

Auburn Dam, part of the Central Valley Project, was authorized in 1965. The Auburn Dam and Reservoir site is located on the north fork of the American River adjacent to the City of Auburn. The present downstream Folsom Dam and levee system do not provide adequate flood protection. This project will provide additional flood protection to the Sacramento area. The Reclamation Board supports $1,500,000 for this program.

Mr. HILL. Our next speaker, George McKean.

Mr. McKEAN. Mr. Chairman and Mr. Fazio, my name is George McKean, Chairman of the Board of Directors of the Mid Valley Water Authority.

I am appearing today on behalf of the Authority and in support of the U.S. Bureau of Reclamation San Jaoquin Valley Conveyance Investigation and the Offstream Storage Study.

With me today are Mr. Richard Schafer, Jeff Taylor, Audrey Raterman, representing the Authority, also.

My written statement has been submitted in order to save the committee's time. I ask it be included in the record.

We request that the subcommittee allocate $50,000 for the San Jaoquin Valley Conveyance Investigation and $150,000 for the Offstream Storage Studies to continue this orderly development of the mid-valley program.

Thank you for this privilege of appearing before the committee. Thank you.

[The statement of George McKean follows:]

STATEMENT OF THE
MID-VALLEY WATER AUTHORITY*
BEFORE THE
UNITED STATES HOUSE OF REPRESENTATIVES
COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
HONORABLE TOM BEVILL, CHAIRMAN

Mr. Chairman, and Members of the Committee:

My name is George D. McKean and I am Chairman of the Board of Directors of the Mid-Valley Water Authority. I am appearing today in support of the continued funding of the Bureau of Reclamation planning study identified in prior budgets as the San Joaquin Valley Conveyance Study. This study has been funded in prior years, but was not allocated funds in the President's budget for Fiscal Year 1990-91.

My purpose before the Committee is to request that funds be included in the Fiscal Year 1990-91 budget in an amount not less than $50,000 for advance planning of Stage Two of the preferred alternative identified in the feasibility study. Without these funds, we will not be able to continue the orderly development of the Mid-Valley Canal Project.

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*Presented by George D. McKean, Chairman of the Board of Directors of the Mid-Valley Water Authority, in Washington D.C. on April 4, 1990.

PURPOSE AND AUTHORITY

The purpose of the San Joaquin Valley Conveyance Investigation is to evaluate the economic feasibility of alternative routings of conveyance (canal) facilities for the importation of additional CVP water supply into the Valley for alleviation of the existing 1.0 million acre-feet of groundwater overdraft. Enhancement of fish and wildlife resources is a corollary objective of the study.

The study is being conducted in cooperation with the State of California, Department of Water Resources and the Mid-Valley Water Authority.

The San Joaquin Valley Conveyance Investigation is being conducted under the East Side Division Authorization Act of September 7, 1964, P.L. 89-561 and was initiated in October, 1984.

STUDY AREA

The study area lies within the San Joaquin Valley covering portions of Merced, Madera, Fresno, Tulare, Kings and Kern Counties and contains approximately 3-million acres.

STUDY STATUS

The San Joaquin Valley Conveyance Investigation report is currently under final review by the Bureau of Reclamation and the final published report is expected to be released in April 1990.

The Bureau's report describes the various alternatives that were evaluated and identifies a preferred alternative which provides for the development of the Mid-Valley Canal Project in three stages.

In the Initial Stage, no new conveyance facilities would be constructed. Existing San Joaquin Valley conveyance facilities would be used to deliver additional water to the MVWA service area and would provide short-term reduction of the groundwater overdraft.

The Second Stage of the plan would include the construction of an intertie between the Cross Valley Canal and the Friant-Kern Canal. Use of the Cross Valley Canal to wheel MVWA supplies would require negotiation of an agreement with the canal owners. Several members of the MVWA are also part owners of the Cross Valley Canal. A series of pumping plants would be constructed to move water north in the Friant-Kern Canal from the intertie.

Under Stage Three, with the allocation of additional CVP water supplies to the MVWA, new conveyance facilities would be constructed or existing ones enlarged.

With the completion of Stage Three, an average annual delivery of 645,000 acre-feet of CVP water supplies would be delivered to the Mid-Valley Water Authority service area.

In addition to relieving the groundwater overdraft problem on the east side of the San Joaquin Valley, the preferred alternative would deliver additional CVP water supplies to wetland habitat in the Sacramento and San Joaquin Valleys and integrate wetland return flows with the other CVP water supplies.

LEGISLATION

On January 31, 1989, Congressmen Lehman, Pashayan, Coelho and Thomas introduced legislation (HR 738) to authorize the construction of the Mid-Valley Unit of the Central Valley Project. However, no hearings have been held on HR 738 pending completion of the San Joaquin Valley Conveyance Investigation.

APPROPRIATIONS

General investigation funds for the Bureau of Reclamation have been included in prior years' budgets for the San Joaquin Valley Conveyance Investigation but no funds have been included in the 1990-91 budget. Therefore, we request the inclusion of $50,000 in the 1990-91 budget for Advanced Planning for the Preferred Alternative identified in the San Joaquin Valley Conveyance Investigation.

I appreciate the privilege of appearing before the Committee and respectfully urge your support and ask that my statement be made a part of the hearing record.

STATEMENT OF THE MID-VALLEY WATER AUTHORITY* BEFORE THE UNITED STATES HOUSE OF REPRESENTATIVES COMMITTEE ON APPROPRIATIONS SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT HONORABLE TOM BEVILL, CHAIRMAN

Mr. Chairman, and Members of the Committee:

My name is George D. McKean and I am chairman of the Board of Directors of the Mid-Valley Water Authority. I am appearing today in support of the Offstream Storage study being conducted by the Bureau of Reclamation. This study has been funded in prior years, but was not allocated funds in the President's budget for Fiscal Year 1990-91.

My purpose before the Committee is to request that $150,000 be included in the FY 1990-91 budget. Without these funds, the Bureau will not be able to complete the Offstream Storage Study. After four consecutive drought years, the importance of available offstream storage for conservation of local stream runoff in wet years cannot be over emphasized.

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*Presented by George D. McKean, Chairman of the Board of Directors of the Mid-Valley Water Authority, in Washington, D.C. on April 4, 1990.

PURPOSE

The purpose of the Offstream Storage Investigation is to define one or more offstream water storage sites in the San Joaquin or Sacramento Valleys that will provide additional firm CVP water supply and increase the flexibility of current and future water delivery systems consistent with operations of the Central Valley Project and the State Water Project.

The U.S. Bureau of Reclamation (USBR) is working jointly with the California Department of Water Resources (DWR) and the U.S. Army Corps of Engineers (USACOE) in the development of the Offstream Water Storage Study. The DWR will provide 50-percent of the costs of the study with in-kind services.

APPROPRIATIONS

General Investigation funds for the Bureau of Reclamation have been included in prior years' budgets for the Offstream Storage Investigation but no funds have been included in the 1990-91 budget.

The Bureau needs $150,000 during fiscal year 1990-91 to complete the study and prepare a final report of their findings. Therefore, we request an appropriation of $150,000 during fiscal year 1990-91 for the Offstream Storage Studies.

I appreciate the privilege of appearing before the Committee and respectfully urge your support and ask that my statement be made a part of the hearing record.

Mr. Fazio. Thank you, George. That was just about the right length for everybody's testimony.

Mr. Hill. Thank you very much. Mr. Joe Judge.

Mr. Judge. I am Joe Judge, and I am Director of the Santa Clara Valley Water District. I am submitting four statements regarding the President's 1990, 1991 budget for work by the Corps of Engineers:

First, the statement supporting the amount of $2 million to reimburse local sponsors for their cost in excess of 50 percent of the total project cost to the Pajaro River;

Second, a statement supporting the amount of $9 million for the Guadalupe River project;

Third, a statement supporting the amount of $424,000 to complete preconstruction engineering and design of the Coyote Creek, Berryessa Creek portion of the Guadalupe River;

Fourth, a statement supporting the amount of $300,000 to continue the feasibility study in the upper Guadalupe Bay.

I respectfully request that these formal statements be accepted for the record, and I would like to thank you very much.

[The statement of Joe Judge follows:]

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STATEMENT OF

JOE JUDGE

BOARD OF DIRECTORS

Santa Clara Valley Water District
San Jose, California

April 4, 1990

Before the

United States
House of Represenatives
Committee on Appropriations
Subcommittee on Energy and Water Development
Honorable Tom Bevill, Chairman

SUMMARY

THE STATEMENT SUPPORTS THE PRESIDENT'S 1990-91 BUDGET IN THE AMOUNT OF $200,000,000 FOR THE PAJARO RIVER/UVAS CARNADERO CREEK PROJECT.

BACKGROUND

The Pajaro River: Uvas Carnadero Creek Project is located in Gilroy in the southern part of Santa Clara County, California. Congress originally authorized a levee project along Uvas Creek in 1944. Subsequently a more comprehensive effort to study the entire Pajaro River Basin was authorized by Congress in 1945. A specific report on the Uvas-Carnadero Creek portion was completed in August 1975.

The project is a single levee on the northwest side of the creek to prevent flood flows from entering the southern part of the City of Gilroy. In February 1981, a public meeting was held by the Corps of Engineers in Gilroy. The final General Design Memorandum was completed in September 1985. Construction began in September 1987 and was completed in July 1989. The project has an approximate $13.4 million total project cost.

The January 1982 flood, though not major in magnitude, seriously threatened the City of Gilroy. Emergency actions were necessary to prevent failure of the existing levee. However, on February 17, 1986 floodwaters exceeded the banks of Uvas Creek and flowed into 200 homes and 20 businesses causing damages exceeding $5 million. Floodwaters were greater than three feet deep.

The project protects about 600 homes, a new high school and commercial and industrial establishments from flooding. This area is that which the City of Gilroy and the county of Santa Clara have designated for development in lieu of other areas easterly of the present city which are subject to more severe flooding and in which agricultural operations are to be preserved. The project prevents damages of $19.6 million during a 1% flood event.

STUDY SYNOPSIS

Construction started in September 1987. All the project elements were completed by July 1989.

PRIOR FUNDING

In 1983 funding was first provided in the amount of $190,000 to carry out planning and design of the project through FY 1985 and to prepare the project for construction. The first stage of construction was funded ($500,000) in FY 1987. In FY 1988 $1,865,000 was budgeted to continue construction. The traditional non-federal costs on this project exceed 50% of the total project cost. In FY 1989 $2,470,000 was appropriated to finalize construction obligations including partial reimbursement of designated local sponsor costs.

NECESSARY FY91 FUNDING

Funding for the Uvas-Carnadero Creek project during 1991 in the amount of $2 million will be required to fully reimburse local sponsors for their costs in excess of 50% of the total project costs.

RECOMMENDATION

Construction of this project was completed in July 1989. It is requested that the President's Budget be supported in the amount of $2 million to complete the reimbursement of local sponsor costs in excess of 50% of the total project cost.

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STATEMENT OF

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BOARD OF DIRECTORS

Santa Clara Valley Water District
San Jose, California

April 4, 1990

Before the

United States Senate
Committee on Appropriations
Subcommittee on Energy and Water Development
Honorable J. Bennett Johnston, Chairman

SUMMARY

THE STATEMENT URGES SUPPORT OF THE PRESIDENT'S 1990-91 BUDGET IN THE AMOUNT OF $9,000,000 FOR THE GUADALUPE RIVER PROJECT.

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STATEMENT OF

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Santa Clara Valley Water District
San Jose, California

April 4, 1990

Before the

United States
House of Representatives
Committee on Appropriations
Subcommittee on Energy and Water Development
Honorable Tom Bevill, Chairman

SUMMARY

THE STATEMENT URGES SUPPORT OF THE PRESIDENT'S 1990–91 BUDGET IN THE AMOUNT OF $9,000,000 FOR THE GUADALUPE RIVER PROJECT.

BACKGROUND

The Guadalupe River includes the major waterway through the highly developed area of San Jose, California. Historically, the river has flooded the downtown areas of San Jose and Alviso beyond local capability to prevent. For example, estimated damages from a one percent or 100-year flood, which would inundate the urban center of San Jose, is $71,800,000. It is estimated that a 50-year flood on this river would cause $43,500,000 worth of damage under existing conditions. The probability of such a flood occurring before implementation of flood prevention measures is quite high. A 50-year flood has an 18 percent chance of occurring during a 10-year period; a 100-year flood has about 10 percent chance of occurring during this same period. There is strong potential, therefore, that a damaging flood will occur before the problem can be resolved. The Guadalupe River had started to overflow its banks in April 1982 and January 1983 before the storm receded and avoided major damage. The Guadalupe River did overbank in February 1986 causing some damage to residences and business in the St. John and Pleasant Street area.

STUDY SYNOPSIS

In 1971, the community requested the Corps of Engineers to reactivate its earlier study. The Plan of Study was completed in 1973. The initial problem definition and alternative screening was completed in 1974. More detailed problem definition and alternative studies for the Guadalupe River were completed in 1978. The Stage 2 report was completed for the combined Guadalupe River, Coyote Creek and Baylands. The report at that time established the financial feasibility and federal interest in the Guadalupe River.

In an effort to accelerate the completion of this overall program, the local community through the Santa Clara Valley Water District has provided a substantial amount of technical and financial assistance since 1972. Special planning studies have been completed by the District for inclusion into the Corps' studies at a cost of over

$430,000. The Guadalupe River project received authorization for construction under the Water Resources Development Act of 1986. Since that time, the General Design Memorandum (GDM) has been drafted and is scheduled for completion in October 1989, in anticipation of start of construction in late Spring or early Summer of 1990.

The severe flood problem and the ominous threat of future damages has forced the local community to initiate local projects within the Corps project reach and reaches downstream of the Corps limits. In excess of $16 million has been spent on the planning, design and construction of such improvements to date.

FY 1990 FUNDING

The 1990 Budget includes $400,000 to complete the Preconstruction Engineering and Design (PE&D) on the Guadalupe River and $750,000 to begin construction.

NECESSARY FY 1991 FUNDING

Funding for the Guadalupe River project during 1991 in the amount of $9 million to continue construction is essential to providing critically needed flood protection to the metropolition area of San Jose and the North San Jose community of Alviso.

RECOMMENDATION

Based upon the present high flood risk and potential damage from the Guadalupe River, it is urgently requested that the President's 1990-91 Budget be supported in the amount of $9 million, for the Guadalupe River project.

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STATEMENT OF

JOE JUDGE

BOARD OF DIRECTORS

Santa Clara Valley Water District
San Jose, California

April 4, 1990

Before the

United States
House of Represenatives
Committee on Appropriations
Subcommittee on Energy and Water Development
Honorable Tom Bevill, Chairman

SUMMARY

THE STATEMENT SUPPORTS THE PRESIDENT'S 1990-91 BUDGET IN THE AMOUNT OF $424,000 TO COMPLETE PRECONSTRUCTION, ENGINEERING AND DESIGN OF THE COYOTE/BERRYESSA CREEKS PORTION OF THE GUADALUPE RIVER AND ADJACENT STREAMS PROJECT.

BACKGROUND

The Coyote and Berryessa Creeks investigation was authorized by Congress in 1941 under the Guadalupe River and Adjacent Streams authority. Coyote Creek is one of the two major waterways that flow through the highly urbanized areas of San Jose, Milpitas and Santa Clara County, California. Berryessa Creek flows through a small portion of San Jose and the growing community of Milpitas. Historically, Coyote Creek has flooded the north San Jose community of Alviso beyond local capability to prevent. Damages on Coyote Creek would be $114 million during the 1% event to the north San Jose and Milpitas area. Berryessa Creek would cause $20 million in damage to the homes and industry of Milpitas. The probability of a large flood occurring before implementation of flood prevention measures is quite high. A 50-year flood has an 18 percent chance of occurring during a 10-year period; a 100-year flood has about 10 percent chance of occurring during this same period. There is strong potential, therefore, that a damaging flood will occur before the problem can be resolved. In January 1983, floodwaters escaped from Berryessa Creek and caused damage to several homes and businesses. Coyote Creek has caused the greater damages amounting to several million dollars, overbanking in April 1982 and again in March 1983. Hundreds of people were forced to evacuate their homes where floodwater stood for many days.

STUDY SYNOPSIS

In 1971, the community requested the Corps of Engineers to reactivate its earlier Guadalupe River and Adjacent Streams Study which included Coyote Creek. The Plan of Study was completed in 1973. The initial problem definition and alternative screening was completed in 1974. More detailed problem definition and alternative studies were completed in 1978. The third phase, study of freshwater flooding in the Baylands, (which included the lower reaches on Coyote Creek) was completed in 1979. The Stage 2 report could not establish the financial feasibility and federal interest in the Coyote Creek. In light of flooding in 1982 and 1983, the Corps refocused its study on Coyote Creek to address the inadequate level of protection provided by unstable levees. Berryessa Creek originally was a Section 205 study but was combined with Coyote Creek when the project cost exceeded the limits of that program.

In an effort to accelerate the completion of this overall program, the local community through the Santa Clara Valley Water District has provided a substantial amount of technical and financial assistance since 1972. Special planning studies have been completed by the District for inclusion into the Corps' studies. The Coyote/Berryessa Creek project received authorization for preconstruction planning, engineering and design under the Water Resources Development Act of 1986.

The severe flood problem and the ominous threat of future damages has forced the local community to initiate a local project on Coyote Creek in anticipation of future federal participation. Over $9 million has been spent on the planning, design and construction of improvements on Coyote Creek to date, which are planned for augmentation of and incorporation into the federal project. In addition, Congress authorized, in the Water Resources Development Act of 1988 (PL 100-676), $3 million in reimbursement to the Water District for construction of flood control measures upstream of the Milpitas Sewage Treatment Plant. The Corps and District have since entered into a Memorandum of Agreement relative to this reimbursement.

FY 1990 FUNDING

The 1990 Budget included $800,000 to continue Preconstruction Engineering and Design (PE&D) on Coyote and Berryessa Creeks.

NECESSARY FY91 FUNDING

Funding for the Coyote/Berryessa Creek project during 1991 in the amount of $424,000 will be required to complete Preconstruction, Engineering and Design (PE&D).

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STATEMENT OF

JOE JUDGE

BOARD OF DIRECTORS

Santa Clara Valley Water District
San Jose, California

April 4, 1990

Before the

United States
House of Representatives
Committee on Appropriations
Subcommittee on Energy and Water Development
Honorable Tom Bevill, Chairman

SUMMARY

THE STATEMENT SUPPORTS THE PRESIDENT'S 1990-91 BUDGET IN THE AMOUNT OF $300,000 TO CONTINUE THE FEASIBILITY STUDY ON THE UPPER GUADALUPE PORTION OF THE GUADALUPE RIVER PROJECT.

BACKGROUND

The Guadalupe River is one of the two major waterways that flow through the highly urbanized area of Santa Clara County, California. Historically, the river has flooded the central district of San Jose and areas south beyond local capability to prevent. For example, the estimated damages from a one percent or 100-year flood, which would inundate the urban center of San Jose, is $71,800,000. Damages in the upper Guadalupe River's densely residential floodplain south of Highway 280 would exceed $50 million. The probability of a large flood occurring before implementation of flood prevention measures is quite high. A 50-year flood has an 18 percent chance of occurring during a 10-year period; a 100-year flood has about 10 percent chance of occurring during this same period. There is strong potential, therefore, that a damaging flood will occur before the problem can be resolved. The upper Guadalupe River near Alma Street had started to overflow its banks in February 1980 before the storm receded and avoided major damage. The upper Guadalupe River did overbank in March 1982 and again in January 1983 causing damage to several residences and business in the Alma Street and Willow Street area.

STUDY SYNOPSIS

In 1971, the community requested the Corps of Engineers to reactivate its earlier study. The Plan of Study was completed in 1973. The initial problem definition and alternative screening was completed in 1974. More detailed problem definition and alternative studies for the Guadalupe River were completed in 1978. The 1980 Stage 2 report could only establish the financial feasibility and federal interest in the Guadalupe River between Highway 880 and Highway 280. In light of flooding in 1982 and 1983, the local sponsors requested that the Corps reopen their study of the upper Guadalupe River (upstream of Highway 280).

FY 1990 FUNDING

A feasibility investigation on the upper Guadalupe River commenced during 1990 with funding in the amount of $200,000.

NECESSARY FY91 FUNDING

Funding for the upper Guadalupe project during 1991 in the amount of $300,000 to continue the feasibility study effort is essential to timely implementation of critically needed flood protection.

RECOMMENDATION

Based upon the present high flood risk and potential damage from the upper Guadalupe River, it is urgently requested that the President's 1990-91 Budget be supported in the amount of $300,000 to continue the feasibility study on the upper Guadalupe River. Costs of the study are shared equally with the sponsor.

Mr. FAZIO. Thank you very much, and we will accept them for the record.

Mr. HILL. Thank you very much.

Next, Albert Henley, who needs no introduction.

Mr. HENLEY. Mr. Chairman, we support the President's budget item with regard to San Felipe, and we ask that you approve it as well.

And we will be happy then, because this marks really the end, I think, of the construction program of that portion of the San Felipe Division, which serves Santa Clara and San Benito Counties—I should say rescue those two counties in the pre-drought condition.

As you have heard, I am retiring, so that this end of the work on my own part at least is very appropriate. And it remains only for me to thank the committee chairman, the Members of the committee, and the able staff for many, many courtesies throughout the years.

I will miss seeing you all every year.

Mr. FAZIO. Thank you, Mr. Henley. Nice to have an end at a time when you can see the work behind you. Not everybody gets that.

Mr. BEVILL. We are going to miss you and wish you the very best. You have got a well earned vacation coming up.

Mr. HENLEY. After many a summer dies the swan.

Mr. MYERS. Best wishes to you. Enjoyed working with you, but don't forget us.

Mr. HILL. I don't know why these young fellows retire.

But with that, I will introduce Michael Armstrong, General Manager of the Pajaro Valley.

Mr. ARMSTRONG. I very much appreciate the opportunity to appear before you today on behalf of the Pajaro Valley Water Management Agency, which is Congressman Leon Panetta's district.

This year, for the first time in the last two years, we are in the President's budget for $300,000, which is good news. Not a lot of money compared to many of the other projects that you have heard this morning, but it's going to be instrumental to us to complete our feasibility study, work with the Bureau, cost-sharing effort with the Bureau, and get on with the work at hand in the EIR/EIS business so we can get things moving.

I would like to submit our complete statement for the record and with that thank you very much for the opportunity to appear before you today.

[The statement of Michael D. Armstrong follows:]

PAJARO VALLEY WATER MANAGEMENT AGENCY
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STATEMENT OF THE
PAJARO VALLEY WATER MANAGEMENT AGENCY
BEFORE THE

U.S. SENATE, COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

AND BEFORE THE

U.S. HOUSE OF REPRESENTATIVES, COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

BY

MICHAEL D. ARMSTRONG
GENERAL MANAGER
AND
STEPHEN DAUTOFF
CHAIRMAN, BOARD OF DIRECTORS

Mr. Chairman, thank you for the opportunity to appear before you today and for the Subcommittee's willingness to take the time to hear the needs of the Pajaro Valley Water Management Agency.

The Pajaro Valley Water Management Agency (PVWMA) was formed in 1984 by an overwhelming voter approval of 80% to maintain local control of water resources. As a California State Special District, the Agency is charged to economically and efficiently manage all water resources in a 125 square mile area that encompasses southern Santa Cruz County, northern Monterey County and a portion of San Benito County.

Because of its location on California's Central Coast bordering the beautiful and bountiful Monterey Bay on the west and the Santa Cruz Mountains on the east, the Valley's rich agricultural land produces a great percentage of some of California's most important crops and flowers. As an example of this productivity, the Pajaro Valley produces more roses and strawberries than any other area in the world.

Like many agricultural areas in the state, groundwater is the principal source of water in the Pajaro Valley. And, like other areas, groundwater levels have declined over the decades as more acreage has been converted to farmland and as crops and flowers that demand more water have replaced those with less requirements. Where artesian wells used to provide ample water to farmers, today sea water intrusion, overdraft and pollution threaten the future of the Valley's primary industry: agriculture.

Between 1950 and 1983, several studies and investigations of the Pajaro Valley groundwater basin were conducted by the USGS, the U.S. Army Corps of Engineers, the State Department of Water Resources and many State and local agencies. While details varied, general conclusions and projections agreed that the Pajaro groundwater basin faced a future of continued decline unless the basin was brought into hydrological balance.

In 1987, the PVWMA notified the Bureau of Reclamation of its intent to utilize the 19,900 acre feet of water reserved for it by the Bureau under the Watsonville sub unit of the San Felipe Division of the Central Valley Project. Concurrently, this Agency began a cooperative effort with the Bureau to complete a feasibility and water augmentation study and to develop best management practices for the Pajaro Valley.

For the past two budget years, the California Water Commission has supported the work of the Bureau and this Agency in recommending continued funding for the feasibility studies. In FY 87-88 and FY 88-89 $100,000 of a requested $400,000 was allocated for Bureau work. This year, we request your Subcommittee support for the President's Budget which includes $300,000 for the Watsonville sub unit. This funding will allow us to complete the feasibility study and move into EIR/EIS work.

The Board of Directors of the PVWMA has worked hard to complete the present studies in a comprehensive manner. Many options for conserving, reclaiming and redistributing water are under consideration. Our goal is to be careful stewards of all present and future water resources and to endeavor to live within the means of the hydrologic system of our groundwater basin, if possible. Quality of life and economic viability go hand in hand. The rivers and streams and wildlife that inhabit the Pajaro Valley must be protected while we secure systems that will deliver sufficient water to our residents and businesses.

Mr. Chairman, we urge you to give your support to the Watsonville sub unit of the San Felipe Division in the Bureau's FY 90-91 Budget. With your continued support, the Pajaro Valley Water Management Agency will be able to make sound decisions concerning the management of our most precious resource, water. On behalf of our entire Board of Directors and the people served by our Agency, thank you for your support and continued assistance.

Mr. **Fazio**. Thank you.

Moving right along.

Mr. **Hill**. Our next speaker will introduce himself. Go ahead.

Mr. **Campbell**. Mr. Chairman, Members of the committee, my name is Jack Campbell. This is the third time that this Tehama Colusa Canal Authority has had the opportunity to appear before you, and each time we have supported the President's budget for the Bureau of Reclamation Central Valley Project Operation and Maintenance Funds.

We have operated two canal systems for the last 18 months. We find it's very, very successful, and we are really concerned that and appreciate the fact of your past support, that operation and maintenance funding continues.

Contained within the 64,233,000 this year is approximately 7.5 million that goes almost exclusively toward Delta monitoring Suisun monitoring fisheries restoration on the Trinity River and some work on the Sacramento River.

Also included in that sum is an amount of around 200,000 for the update of safety for wheelchair access.

We thank you very much for the opportunity to make this statement.

[The statement of John C. Campbell follows:]

SUMMARY
Statement before April 4, 1990

UNITED STATES HOUSE OF REPRESENTATIVES
COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
HONORABLE TOM BEVILL, CHAIRMAN

by John C. Campbell, General Manager
Tehama-Colusa Canal Authority

Mr. Chairman:

The United States Department of Interior, Bureau of Reclamation, entered into a cooperative agreement with the Tehama-Colusa Canal Authority for the operation and maintenance of the Tehama-Colusa and Corning Canals on October 17, 1988.

Our expenses for operation and maintenance for fiscal year 1991 of $1,326,000 are included in the President's Budget of $64,233.000 for the Operation and Maintenance Program-Central Valley Project. Also included in the $64,233.000, and supported by the Tehama-Colusa Canal Authority, is $1,200,000 for Delta Support, $1,732,000 for Kesterson Support, $500,000 for Suisun Marsh Support, $1,308,000 for fish facility rehabilitation and and replacement and $202,000 for retro-fit of recreational facilities for the handicapped.

We request your approval of the President's Budget of $64,233,000.

We are deeply appreciative of the past assistance given by this committee for appropriations for canal and distribution system construction and operation and maintenance costs for constructed CVP facilities.

Statement before April 4, 1990

UNITED STATES HOUSE OF REPRESENTATIVES
COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
HONORABLE TOM BEVILL, CHAIRMAN

by John C. Campbell, General Manager
Tehama-Colusa Canal Authority

Mr. Chairman:

In October of 1988, the United States Department of Interior, Bureau of Reclamation entered into a cooperative agreement with the Tehama-Colusa Canal Authority for the operation and maintenance of the Tehama-Colusa and Corning Canals. The water users through the Tehama-Colusa Canal Authority, have been responsible for these canal service area units of the Central Valley Project since November of 1988.

It is the intention and goal of the Board of Directors and staff of the Tehama-Colusa Canal Authority to operate and maintain these canal systems in an efficient and cost effective manner. In order to assure adequate funding for the operation and maintenance of the systems, the Tehama-Colusa Canal Authority will seek and support adequate funding for this and other elements of the Central Valley Project.

The Tehama-Colusa Canal Authority has requested that the Bureau of Reclamation enter into discussions that will result in the assumption of the operation and maintenance of the Corning Pumping Plant during Fiscal Year 1990-1991. During the past eighteen months, the Tehama-Colusa Canal Authority has gained the experience necessary to be confident that it can operate within a budget that it researches and develops. Our budget projections for Fiscal Year 1990-1991 include the Corning Pumping Plant and are in the amount of $1,326,000. The costs of the operation and maintenance of the Corning Pumping Plant together with the Corning and Tehama-Colusa Canals are reflected in the Presidents Budget for Fiscal Year, 1990-1991. During Fiscal Year 1989-1990, the Authority is sustaining a funding reduction in the amount of $140,000 or 13% of its approved budget. By reducing the amount of work that can be expected to be accomplished, we will be able to operate within these restraints.

The Tehama-Colusa Canal Authority is concerned that inadequate appropriations for operation and maintenance of the Central Valley Project and especially these particular canal systems, might well prevent timely and cost effective repairs and replacements of delivery facilities. We are further concerned that delays in funding much needed canal maintenance could well result in deterioration that would effect the ability to deliver irrigation water.

The Tehama-Colusa Canal Authority fully supports the $64,233,000 in the President's Budget for Fiscal Year 1990-1991. Contained within the President's Budget for the Central Valley Project is $1,732,000 for monitoring and evaluation at Kesterson Reservoir; $202,000 for recreation, retro-fit of existing facilities for the handicapped and food for fish hatcheries; $1,200,000 for Delta water quality monitoring; $2,400,000 for Trinity River restoration; $500,000 for environmental monitoring work on the Suisun Marsh and $1,308,000 for fish facility rehabilitation and replacement. Although these items are historically not typical operation and maintenance functions of delivery systems, they have been imposed on the Bureau of Reclamation as a responsibility. The inclusion of these and other environmental elements into the operation and maintenance budget creates an impression that the total amount of the funding requested is used for the operation and maintenance of the existing delivery facilities and as a result, may act as a limit the amount actually made available for much needed work.

The water users in the service areas of the Tehama-Colusa and Corning Canals are deeply appreciative of the past assistance given by your committee for appropriations for canal and distribution system construction and operation and maintenance. This committee's recognition of much needed funding for operation, maintenance and rehabilitation of constructed facilities is welcome and refreshing to the water user.

Mr. **Fazio**. Thank you very much.

Mr. **Hill**. Thank you very much.

The Delta Support Studies and various other Contra Costa County Water District interests will file a statement, and we will proceed with Mr. Douglass Wilhoit, Chairman of the Board of Supervisors.

[The statement of the Contra Costa Water District follows:]

Statement of:	Contra Costa Water District 1331 Concord Avenue/P.O. Box H20 Concord, CA 94524
Presented by:	William E. Seegmiller, General Manager
Before:	United States House of Representatives Committee on Appropriations, Sub-Committee On Energy and Water Development Honorable Tom Bevill, Chairman
Presentation Date:	April 4, 1990

SACRAMENTO - SAN JOAQUIN DELTA/BAY WATER QUALITY

Honorable Chairman and Committee members, my name is William E. Seegmiller, General Manager of the Contra Costa Water District, a public agency of the State of California.

For fifty years, Contra Costa Water District by way of repayment contracts with the U.S. Bureau of Reclamation, has been responsible for the water supply for some 400,000 people, 23 industries that employ over 12,000 employees, and 88 small farms, through the Contra Costa Canal System, the first unit of the Federal Central Valley Project. The District also diverts water from the Delta under a vested water right dating back to 1930's prior to the CVP. We depend solely and totally on the Sacramento-San Joaquin Delta for our water supply.

Due to the USBR's over-commitment of the CVP water supply and build-ups in exports from the Delta, we will experience re-occurring increased salt water intrusion in the Delta, to a level that is adverse to public health, causes loss of certain industrial products, adds severe penalty treatment costs to all industry, and causes damage to irrigated plants.

Please note that the Bay Area Counties who depend on the Delta normally export about three percent of the total water extracted from the Delta and the remainder, approximately ninety seven percent is diverted from the Delta mostly to the San Joaquin Valley irrigated agriculture and then over the Tehachapi Mountains into the Los Angeles Basin Counties where, 16 million people, over two-thirds of the State's population reside.

These adverse effects on public health, industry and agriculture occurred, during 1959 - 1960 - 1961, due to USBR operations, during the 1976 - 1977 drought, the 1987 - 1988 drought, during January and February of 1989, and again during the summer of 1989 and the winter of 1990, due to drought periods and to the obvious over-commitment of the CVP. For 161 days in 1959 and 143 days in 1961, due to USBR export pumping caused salt water intrusion, the Water District distributed notices to the County Health Department, doctors, hospitals, and the press warning of high sodium levels in the water supply.

Accordingly, Contra Costa Water District respectfully requests support for the conditions necessary to protect the beneficial uses in the Sacramento-San Joaquin Delta, San Francisco Bay and Suisun Marsh, with particular attention to:

U.S. CORPS OF ENGINEERS

No. 7 Sacramento-San Joaquin Delta Investigation

CCWD supports the President's budget of $350,000 which funds the U.S. Corps of Engineers' equal cost sharing efforts with the California Department of Water Resources to address Delta water quality and fish and wildlife concerns.

Before proceeding with the COE's draft feasibility study for flood control and other related activities, it is essential that COE have the study results' capability to avoid adverse impacts on Delta water quality, as well as on fish and wildlife.

U.S. BUREAU OF RECLAMATION'S PROGRAMS

No. 61 1) Delta Support Studies
2) Suisun Marsh Preservation Agreement

The Bureau of Reclamation and Department of Water Resources agree that operation of the Federal Central Valley and State Water Projects have adverse effects on municipal, industrial and agricultural users which pump their water from the Delta, as well as on fish and wildlife in the Sacramento-San Joaquin Delta and San Francisco Bay Estuary.

State Water Resources Control Board's Decision 1485 requires that environmental studies be continued for data to be used in future State water rights hearings. Contra Costa Water District urges full funding for these studies including efforts in the Delta, the Bay, and the Federal share of the Suisun Marsh water quality facilities.

No. 79A Offstream Storage

Contra Costa Water District supports funding of feasibility investigations for offstream storage.

Under provisions of PL 99-546 and the Coordinated Operations Agreement, the U.S. Bureau of Reclamation now has a legal obligation to share with the California Department of Water Resources the responsibility of meeting Bay-Delta water quality standards.

Offstream storage such as the California authorized Los Banos Grande Reservoir, provides a real opportunity for the USBR to participate jointly with California Department of Water Resources in order to satisfy this legal obligation.

Contra Costa Water District supports the reprogramming of an additional $150,000.00 to provide for Federal cost-sharing feasibility work.

These studies would identify, possible Federal participation increments and potential export reduction during critical Delta Water Quality periods and Fishery requirements.

No. 80 San Joaquin Valley Conveyance Study

This study would lead to plans for recharging San Joaquin Valley aquifers with surplus Delta water and subject to the provisions of PL 99-546 and the Coordinated Operations Agreement could manage exports for the protection of Delta beneficial water uses. Contra Costa Water District supports the reprogramming of an additional $50,000.00 for this study.

No. 80A Delta Water Management Program

Consistent with the USBR obligations under PL 99-546 and the Coordinated Operations Agreement, Contra Costa Water District supports the reprogramming of an additional $350,000.00 to allow the USBR to fulfill its responsibility towards developing a program that would correct or at least minimize Delta water quality problems caused by water transfers from the Sacramento-San Joaquin Delta.

No. 81A **San Joaquin River Resource Management Initiative**

The adverse impacts of the San Joaquin River's poor water quality on beneficial uses, has been accruing since implementation of the Friant Project in the 1950's. We applaud Secretary of the Interior Manuel Lujan for initiating a plan of study for integration of surface and ground water operations for the purpose of water quality improvement and fish and wildlife restoration.

To that end, Contra Costa Water District supports the President's budget totalling $500,000 to fund the San Joaquin River Resource Management Initiative Studies.

No. 84 Environmental and Interagency Coordinations Activities

Contra Costa Water District supports the President's budget of $543,000.00, so that the USBR can continue with its multi-agency responsibility as envisioned in the Coordinated Operations Agreement.

In order to implement the Congressional mandates of PL 99-546 and the Coordinated Operations Agreement, we respectfully urge your support for Contra Costa Water District and the California Water Commission's FY 88-89 recommendation for the President's budget requests and the reprogramming of additional funds for California Water Resources activities.

We believe that funding necessary to implement the intent of PL 99-546 will maximize capabilities of existing projects, encourage local and State project financing and minimize the need for federal appropriations.

Please accept our appreciation for this opportunity to appear, and may this statement be made part of the record.

Mr. Wilhoit. Mr. Chairman and Members of the committee, it's a privilege to be here again to make the request on behalf of Sam Joaquin County. As in the past, this committee has been very helpful, and we appreciate all that help and look forward to it in the future.

Mr. Shumway very aptly briefed you on our needs and our concerns; so with that in mind, I would like to do two short things. It's not very often the local elected official gets to go on the record in Washington, D.C.

I would like to take this opportunity to thank Mr. Shumway for his 12 years of outstanding service to our community and his district and the sacrifices made by his family, as all of yours do, in serving the people of the districts in the country.

And also, Mr. Fazio, I would like to pledge to you the promise of San Joaquin County to work with you and our colleagues in Sacramento County with visionary cooperation as we work on our mutual concerns of water delivery and preservation of water in the central part of our state.

And thank you for this opportunity to testify.

[The statement of Douglass Wilhoit follows:]

UNITED STATES HOUSE OF REPRESENTATIVES
COMMITTEE ON APPROPRIATIONS
SUB-COMMITTEE ON ENERGY AND WATER DEVELOPMENT
HONORABLE TOM BEVILL, CHAIRMAN

STATEMENT

On Behalf of
THE COUNTY OF SAN JOAQUIN
and the
SAN JOAQUIN COUNTY FLOOD CONTROL
AND WATER CONSERVATION DISTRICT,
CALIFORNIA

April 4, 1990

Mr. Chairman and Members of the Committee:

My name is Douglass Wilhoit. I am a member of the Board of Supervisors of the County of San Joaquin, California.

San Joaquin County is both a County with highly productive soils devoted to a wide spectrum of agricultural crops and a rapidly growing metropolitan area. The eastern portion of our County has a seriously overdrafted groundwater basin and is in need of additional supplies of surface water. In the eastern portion of our County, which includes the rapidly growing Stockton Metropolitan area, we are subject to salt water intrusion and are now losing a portion of our very valuable groundwater basin each year. This salt water intrusion can only be stopped by partial meeting our water needs through additional supplies of surface water. San Joaquin County has long been directed by the State and

Federal planning authorities to look to the American River for supplemental surface water. Other alternative water supply sources are now foreclosed to us because of the belief by State and Federal authorities that the County's surface water supply would be available from the American River. Accordingly, we do look to the American River as our primary source of additional water.

The southwestern portion of our County, which contains the rapidly growing City of Tracy, also requires additional surface water.

By Federal and other action, the quantity of water in the San Joaquin River, which flows through the County, has been diminished and return flows from primarily Federal irrigation activities have seriously decreased the quality of water which reaches our County in the San Joaquin River. This decrease in water quality must be corrected.

With development and water demands increasing everywhere in our State, we must also be vigilant that the quantity and quality of water that is now available to us in the Sacramento-San Joaquin Delta and elsewhere in the County is not diminished.

Finally, as a County with much land at our below sea level, we are vitally concerned with many flood control measures. It is for the above reasons that we appear before you today.

Specifically, the County of San Joaquin requests the following appropriations be made to the Corps of Engineers and the Bureau of Reclamation for the Fiscal Year October 1, 1990, to September 30, 1991, for the projects of concern to the County:

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Corps of Engineers - Investigations (Survey)	
Sacramento-San Joaquin Delta	$ 350,000
Calaveras River	325,000
Mokelumne River and Tributaries	300,000
San Joaquin River Mainstream and Tributaries	0 (500,000)*
Corps of Engineers - Investigations (Pre-Construction Engineering and Design)	
American and Sacramento Rivers - Sacramento	$ 2,000,000
Bureau of Reclamation - Project Facilities	
Auburn-Folsom South Unit	$ 1,500,000 (300,000)*
Bureau of Reclamation - Special Investigations	
Delta Water Management Program	$ 0 (350,000)*
American River Folsom South Optimization Study	50,000 (100,000)*
San Joaquin River Resources Management Initiative	200,000
Bureau of Reclamation - Operations and Maintenance (Revision)	
Calaveras/Stanislaus Rivers	$ -- (300,000)**

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*Requires add-on funding above the President's Budget.
**Requires line item addition only, although add-on is preferable.

DETAILED COMMENTS

Corps of Engineers - Investigations (Survey)

Sacramento-San Joaquin Delta	$ 350,000

This important investigation is being conducted jointly with the California Department of Water Resources. The study will examine alternatives to improve flood control, water supply, and environmental concerns such as riparian vegetation and water quality in the Delta. This study is of paramount importance in regard to current and future California water needs. San Joaquin County fully supports continued funding for this project.

Calaveras River	$ 325,000

Past floods on the Calaveras River have clearly demonstrated the need to augment the flood control facilities in order to protect a large urban area currently in peril. The Corps is investigating this critical flood problem. In addition, the potential for the addition of much-needed water supply storage is being investigated. The project has definite support from the community and San Joaquin County considers continued funding of this project to be a high priority item. The ultimate project may well offer the opportunity to construct multipurpose facilities, such as South Gulch Dam, which will provide both flood control and augmentation of water supplies available to Eastern San Joaquin County.

Mokelumne River and Tributaries	$ 300,000

The primary focus of this study is to investigate flooding problems along the Mokelumne River and its tributaries, including the flood-prone Cosumnes River. Other essential benefits, including critical water supply, and fish and wildlife enhancement possibilities, are being examined by the Corps. The investigation is well underway, and San Joaquin County strongly supports continued funding of this project, as not only is it important for development of the flood control and other water resources needs of the immediate basin, but it is also an imperative interface with other ongoing Federal, State and local water resource projects in our area.

San Joaquin River Mainstream and Tributaries	$ 0 (500,000)

We are concerned that this important new study is not funded under the President's Budget proposal. This study would address the difficult sedimentation problems experienced along the San Joaquin River flood system, which contributes significantly to flooding and other problems. San Joaquin County strongly urges that $500,000 be included in the budget in order that this serious problem can be studied.

Corps of Engineers - Investigations (Pre-Construction Engineering and Design)

American and Sacramento Rivers - Sacramento	$2,000,000

San Joaquin County fully supports the efforts of the Corps of Engineers and cooperating local agencies in their combined efforts to eliminate the serious flood threat to our neighbors in the metropolitan Sacramento area. However, the County is concerned that the studies being conducted by the Corps do not adequately provide for development of a much-needed water supply from the American River. The County believes that any dam being considered for the American River should be multipurpose; and, in addition to flood control, have water supply as a primary purpose. In particular, we believe it would be foolish and wasteful to construct a flood-control-only dam when there is such an urgent need for water in San Joaquin County and elsewhere in our State. San Joaquin County also should be given priority consideration for any new water developed from the project, as it has requested American River water from the Bureau of Reclamation in the past and in turn has been denied other sources under the assumption that American River water would be available. Attached to this statement is a copy of a recent letter to Mr. Dennis B. Underwood, Commissioner, U.S. Bureau of Reclamation, in which our County states its intention and financial willingness to be involved in a multipurpose Auburn Dam.

Bureau of Reclamation - Project Facilities

Auburn-Folsom South Unit	$1,500,000 (300,000)

In the President's proposed budget, this project is funded only for maintenance of lands acquired for the Auburn Dam and for miscellaneous personnel support. San Joaquin County is concerned that the project is not addressing the water needs of the County as was originally intended. We strongly urge that the Bureau be directed to consider the extension of the Folsom South Canal and the provision for water supply for San Joaquin County. We also recommend that the study include the evaluation of various sized, multipurpose projects at the Auburn site. To this end, the County respectfully requests that $300,000 be added to the budget to support these additional investigations.

Bureau of Reclamation - Special Investigations

Delta Water Management Program	$ 0 (350,000)

This critically important program was not included in the President's Budget for 1991. The purpose of the program is to support and participate with the Department of Water Resources in its various Delta investigations. The program supports engineering and environmental investigations of the north, west, and south Delta. The emphasis is on water quality, water levels, flood control and environmental benefits. San Joaquin County strongly urges that $350,000 be included in the budget in order to continue this program.

American River/Folsom South Optimization Study . . . . $ 50,000
(100,000)

This new study should prove to be very important to San Joaquin County. It could provide an opportunity to gain additional water for the County. The study will evaluate plans for concurrent surface and groundwater use from existing storage developments and tributary streams to meet Folsom South Area water needs and provide suitable instream flows for fishery and recreation purposes in the lower American River. The President's 1991 Budget only includes $50,000 for this study. As this amount is not very significant for a study of this magnitude, San Joaquin County requests an increase of $100,000 for a total budget amount of $150,000. This amount would allow the Bureau to conduct a study yielding meaningful conclusions.

San Joaquin River Resources Management Initiative . . . . $ 200,000

This new study will look at the potential for integrated operation of the San Joaquin and Tulare Lake basin reservoirs, conjunctive use of surface and groundwater, and the rehabilitation of existing conveyance facilities as a means of providing water for fishery restoration and other environmental improvements. San Joaquin County fully supports the President's 1991 Budget inclusion of $200,000 for this study. It is hoped this study will provide an approach to address the serious wrongs which have been done to the lower San Joaquin River through Federal action and the action of others.

Bureau of Reclamation - Operations and Maintenance (Revision)

Calaveras/Stanislaus Rivers . . . . $ --
(300,000)

The Bureau has been conducting a study in cooperation with the California Department of Water Resources on the Calaveras and Stanislaus Rivers. The study is examining conjunctive uses and will result in the development of a water use plan to assist in meeting the water needs of the Calaveras and Stanislaus River Basins. In the past, the Federal share of the study has been funded out of the Bureau's Operations and Maintenance budget. However, increased competition for these funds has placed continuation of this important study in jeopardy. San Joaquin County requests that a specific line item be placed in the Bureau's O&M Budget in the amount of $300,000 for this study in order to remove it from competition from other O&M items. Although an add-on amount is not required to specify this study as a line item, we recommend adding $300,000 to the budget for this study so as not to impact other important O&M items. It is our belief that the pursuit of this study can ultimately result in an increase in the total water available to the eastern portion of our County and at the same time provide one of the practical solutions to the degraded San Joaquin River.

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Mr. **Fazio**. Thank you.

Mr. **Hill**. Our next one is Mr. Allen Boone, Chairman of Fresno Metropolitan Flood Control District.

Colonel **Boone**. Mr. Chairman, and distinguished Members of the committee, my name is Allen Boone, and I am the Chairman of the Board of Directors of the Fresno Metropolitan Flood Control District of Fresno County.

I am also authorized to speak for the Fresno Irrigation District, the County of Fresno, and the Cities of Fresno and Clovis.

We appreciate the committee's continuing support for the Redbank-Farcher Creeks Project and request appropriation of the $7,500,000 allocated in the President's budget for continuation of construction.

We are pleased to report our agency has thus far expended $8.9 million in compliance with our project contract with the Corps, and we anticipate transmitting an additional $1,477,000 to the Corps during 1990 through 1991.

We thank the committee and ask that our complete presentation be made a part of the hearing record.

Thank you, Mr. Chairman.

[The statement of Allen Boone follows:]

BEFORE THE
UNITED STATES SENATE
COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
THE HONORABLE J. BENNETT JOHNSTON, CHAIRMAN

STATEMENT OF ALLEN W. BOONE, FRESNO, CALIFORNIA

MR. CHAIRMAN, AND MEMBERS OF THE COMMITTEE:

My name is Allen Boone and I am Chairman of the Board of Directors of the Fresno Metropolitan Flood Control District of Fresno County, California, the local sponsor for the Redbank-Fancher Creeks Flood Control Project. I am authorized to speak on behalf of the County of Fresno, the Cities of Fresno and Clovis, and the Fresno Irrigation District. In addition, the State of California has enacted legislation approving the project and authorizing State financial participation.

We respectfully request continuing project construction be retained in the FY 90-91 budget in the sum of $7,500,000 as provided in the President's budget. This sum represents the fourth construction unit of the project which will provide flood protection to important areas near Fresno Air Terminal, southeast Fresno, and to key elements of the agricultural irrigation system.

The Redbank-Fancher Creeks Project was initially identified in the Big Dry Creek project investigation of 1940 and the resulting Fresno County Streams project authorization. In 1956, the Congress specifically authorized investigation of a project modification relating to the balance of the stream system. Unfortunately, federal funds were not appropriated until the disastrous 1969 floods.

The Redbank-Fancher Creeks Project has been proven environmentally sound and economically justified on the basis of flood damage prevention alone. Though other benefits accrue, they are not required to produce a positive benefit/cost ratio. The project will provide protection to the metropolitan area of Fresno County containing a population in excess of 400,000. The benefit/cost ratio reported in the 1986 GDM is 1.6:1 at an 8-5/8% interest rate, including CPE cost. Current estimates suggest the final benefit/cost ratio will approach 1.8/1.0.

Estimated average annual flood damages exceed $14,000,000 and affect both urban and agricultural land. The project will also protect an open irrigation canal system which transverses 210,000 acres of the world's most productive agricultural lands, Fresno County's gross annual production continually exceeding 2.0 billion dollars. The project will control the historic flooding which has seen the stream and canal systems overflow an average of once every four years.

The project was reported to Congress as House Document 98-147 and was authorized for construction through PL 99-662. The LCA has been executed and the local funding mechanisms put into place. To date the local sponsor has expended $8,905,102 in compliance with its LCA obligations to the Government. Because of the project's construction status, the requested federal appropriation is critical.

We appreciate the privilege of appearing before the Committee and the past support given the project. We urge your continued support and ask that our statement and the attached detailed presentation be made a part of the hearing record.

April 1990

BEFORE THE UNITED STATES SENATE
COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
THE HONORABLE J. BENNETT JOHNSTON, CHAIRMAN

STATEMENT OF ALLEN W. BOONE, FRESNO, CALIFORNIA

The people of the central county area of Fresno County, California are deeply appreciative of the opportunity to have the presentations of their representatives heard by the honored members of the Congress. While the Redbank-Fancher Creeks Flood Control Project is not large by some standards, it is critically important to the Fresno-Clovis metropolitan area which is the business center of the most productive agricultural county in the world, gross annual production continually exceeding 2.0 billion dollars.

This report, first submitted in May 1971, has been submitted annually to substantiate the continuing vital need for completion of the flood control works specified in the Redbank and Fancher Creeks project report.

AUTHORIZATION:

The Redbank-Fancher Creeks project is a modification of the existing Fresno County Streams, California authorization, incorporating the enlargement of the Big Dry Creek Dam and the containment of the balance of the stream group.

The Congress, on June 13, 1956, authorized the Corps of Engineers to reinvestigate the stream group project, this following the major floods of 1955 and 1956. Unfortunately, funds were not provided and the Corps did not begin the investigation until the area had suffered its worst flooding in history during January and February 1969. The release of funds and the start of the investigation occurred in July 1970, some fourteen years after Congressional authorization.

During July 1980, the Board of Engineers of Rivers and Harbors forwarded to the Chief of the Corps of Engineers the completed project report and environmental impact report. The report was forwarded to the Congress as House Document 98-147, bearing the date January 24, 1984. The project was authorized for construction pursuant to PL 99-662 and the LCA was executed with the local sponsor (the Fresno Metropolitan Flood Control District) on August 1, 1987. Construction was begun in FY 87 and is currently in progress. Completion is scheduled by FY 94.

PROJECT LOCATION AND NEED:

Redbank, Fancher, and Big Dry Creeks of the Fresno County Stream Group, their tributaries and related streams addressed by the project, are located on the western slope of the Sierra Nevada mountains. The watershed encompasses some one hundred seventy five square miles and generates storm runoff which flows through the heart of the metropolitan area. The flows impact directly on the open irrigation canal system which transverses some 210,000 acres of the world's most productive agricultural land and 95,000 acres of a densely developed urban community with a population in excess of 400,000.

It is currently estimated that the flood plain to be protected by the proposed project includes 51,000 acres with an estimated 1990 market value of 3.6 billion dollars. Total estimated average annual flood damages exceed $14,000,000 and affect both urban and agricultural properties.

HISTORY OF FLOODING:

As a result of the uncontrolled nature of the subject stream group, flooding has occurred frequently. Floods of record occurred in March 1938, December 1955, January 1956, January 1969, February 1969, March 1978, and January 1983. In addition, available records indicate flooding of lesser severity occurred in 1914, 1915, 1916, 1937, 1958, 1965, 1972, 1977, and 1986 with the streams and irrigation canal system overtopping their banks on the average of once every four years.

Although the floods of March 1978, January 1983, and February 1986 were of a lesser magnitude than those of 1969, thousands of dollars in damages to private homes, public roads, irrigation facilities and hundreds of acres of prime agricultural lands were experienced. Such floods again demonstrated the urgent need for final construction of the Redbank-Fancher Creeks Project.

LOCAL SUPPORT:

Following the floods of January and February 1969, the Fresno area was declared a federal disaster area. With the realization millions of dollars in flood damage could have been prevented and a recurrence of such floods would be even more devastating, a public hearing on the needed flood control works was held on February 18, 1969. Hundreds of citizens representing some seventy-five public and private organizations met and drafted resolutions to the U. S. Army Corps of Engineers and legislative representatives urging active pursuit of the Redbank-Fancher Creeks Flood Control Project. Subsequently, the County of Fresno, the Cities of Fresno and Clovis, the Fresno Metropolitan Flood Control District, and the Fresno Irrigation District, authorized direct work with the Corps and the Congress to secure adequate flood protection for the Fresno-Clovis metropolitan area.

In an effort to ensure the availability of lands needed for the required flood control structures, the County of Fresno acting jointly with the Flood Control District did, in 1974, effect open-space and conservation zoning of approximately 500 acres. In addition, the Cities of Clovis and Fresno, the County of Fresno, and the Flood Control District, signed contracts providing advanced funding to acquire the necessary project lands.

Relatedly, the California Water Commission has historically supported and continues to support the project. In addition, the State Reclamation Board submitted a supporting letter of intent for local assurances. Further, the California Legislature has enacted and the Governor has signed legislation authorizing State support of and financial participation in the project.

At the local level, a broadly based Citizens Project Advisory Committee was created by the Flood Control District. The Committee and the sixteen community organizations and agencies it represented reviewed and confirmed the project's need and design. The committee has also structured a financing plan to ensure the availability of the required local cost share and the equitable distribution of those costs.

ENVIRONMENTAL CONSIDERATIONS:

The federal project Environmental Impact Statement was finalized in July 1980 following a public hearing held in the project area by the Local Sponsor and the U. S. Army Corps of Engineers. Testimony submitted during the hearing indicated there were no areas of controversy associated with the project or its limited environmental impact. In summary, the testimony confirmed the accuracy of the Draft Environmental Impact Statement in identifying only limited impacts and the adequacy of the proposed mitigation measures.

In addition to the 1980 federal EIS, the Local Sponsor prepared a complete environmental impact report, dated July 1985, pursuant to the California Environmental Quality Act. That EIR and related subsequent reviews, including a supplemental environmental assessment, support the previous findings, further indicating one project component will directly benefit the cleanup of a downstream agricultural chemical plant. Final construction design of the unit has been coordinated among state, local and federal interests to maximize those benefits.

It is confirmed any adverse environmental impact which might be associated with the project would occur during the brief construction period. However, such impacts would be of a temporary nature and insignificant when compared with the permanent environmental and social benefits to be derived.

The congressional authorization of the project mandated that "The project shall include measures determined appropriate by the Secretary to minimize adverse effects on groundwater and to maximize benefits to groundwater, including groundwater recharge." The Corps of Engineers and the Flood Control District are now examining supplemental design investigations to address this Congressional mandate.

PROJECT FEASIBILITY AND FINANCING:

The completed project report, supplemented by additional engineering detail, substantiates the need for the project and identifies strong economic justification. The project costs and benefits, adjusted from the General Design Memorandum are as follows:

Total First Costs (1989)	$67,200,000	
Average Annual Costs (8-5/8%)		$6,014,400(*)
Total Average Annual Benefits:		
Flood Control	$ 9,021,600(*)	
Flood Proofing Cost Reduction	601,440(*)	
Total Average Annual Benefits		$9,623,040(*)

Benefit/Cost Ratio 1.6 to 1.0

(*) Estimates based on 1989 Construction Cost Estimates

Noteworthy is the fact the project is economically justified on the basis of flood damage reduction benefits alone. While other benefits are generated, they are not needed to produce a positive benefit/cost ratio. It should be noted that, while not included in the actual benefit calculations, the proposed project will create significant beneficial effects in the areas of water conservation, groundwater management, wildlife enhancement and recreation.

The distribution of the project costs, based on the new cost-sharing requirements, is as follows:

Federal Government (PL 99-662)	$50,400,000
State of California (SB 502)	11,760,000
Fresno Metropolitan Flood Control District (AB 2113) (Plus Annual O & M and Replacement)	5,040,000
Total Project Cost (1989)	$67,200,000

PROJECT COST SAVINGS:

It is significant to note the Corps of Engineers and the local sponsor have focused efforts in maximizing project design and construction efficiency. These efforts have led to certain structural reductions and construction coordination which produced a near 30% reduction in originally estimated project costs. While each of the project units meets a separate benefit/cost test, each of the units is interdependent as to hydrological operation and construction and the savings noted above are not fully achievable without the integrated construction and operation of all project units.

PROJECT STATUS REVIEW:

Subsequent to the submission of the project report to the Congress as House Document 98-147 in January 1984, much has been accomplished. Congressional enactment of PL 99-662 effected final project construction authorization, inclusive of flood control, recreation and water conservation purposes. The LCA was executed in a formal ceremony on August 1, 1987 and the first construction expenditures were approved by the President and the Congress in FY '87.

In FY '90 the fourth year of construction expenditures is scheduled. The construction activity completed to date, prior to FY '90, produced immediate flood protection benefits to the Friant-Kern Canal of the Bureau of Reclamation's important Central Valley Project. In addition, construction was begun on the Redbank Creek Detention basin which provides flood protection in areas near Fresno Air Terminal and in the southeast residential areas so badly flooded in 1969. The President's 1990-91 budget proposes fourth year construction funding in the amount of $7,500,000. This work will complete the Redbank Creek Basin and begin construction of the Fancher Creek Dam. This unit also protects lands near the airport, southeast Fresno, and key elements of the agricultural irrigation system.

In coordination with the Government's project schedule, the Flood Control District implemented the local project funding mechanisms in 1987-88, accumulating the funds required pursuant to the cost-sharing requirements. The first local payments were made to the Government in 1987. Relatedly, land acquisitions required for all phases of the project are now in excess of 80% complete. To date the Local Sponsor has expended $8,905,102 in compliance with its LCA obligations to the Government.

CONCLUSION; REQUEST FOR APPROPRIATION:

On June 13, 1989, thirty-three years had elapsed since Congress first authorized the proposed Redbank-Fancher Creeks Flood Control Project modification to the Fresno County Streams Project. The need for the project has been identified in a total of eight different studies and investigations performed at both the local and federal levels. The feasibility investigation confirmed the project need and identified strong economic justification for construction. Further, the more advanced and detailed technical analysis associated with the completed General Design Memorandum confirmed the project's need, economic strength, the previous recommendations of the Corps and the requests of the local community.

Because it is our belief the Redbank-Fancher Creeks Flood Control Project has met all requirements for federal participation and meets all current standards of economic justification and environmental protection, we most respectfully urge favorable action by the Committee and the Congress in appropriating continued construction funding for the Redbank-Fancher Creeks Flood Control Project.

April 1990

Mr. HILL. Our next speaker is Mr. Roger Shintaku, Assistant Manager, Santa Ana Watershed Project Authority.

Mr. SHINTAKU. I am Roger Shintaku, Assistant Manager of the Santa Ana Watershed Project Authority. We are the local sponsor of the Bureau of Reclamation Management Study.

The budget includes a $99,000 appropriation for a third and final year of this study. We respectfully request your continued support for an appropriation in this amount to enter a local funding in the same amount in this fiscal year.

Thank you.

[The statement of Roger Shintaku follows:]

SANTA ANA WATERSHED
PROJECT AUTHORITY

3600 Tyler Street, Suite 207, Riverside, Calif. 92503 (714) 785-5411
FAX 785-7076

COMMISSION FOR THE PROJECT AUTHORITY

CHINO BASIN MUNICIPAL WATER DISTRICT
EASTERN MUNICIPAL WATER DISTRICT
ORANGE COUNTY WATER DISTRICT
SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT
WESTERN MUNICIPAL WATER DISTRICT

GENERAL MANAGER
NEIL CLINE

March 26, 1990

United States House of Representatives
Committee on Appropriations
Subcommittee on Energy and Water Development
Honorable Tom Bevill

Dear Congressman Bevill:

The Santa Ana Watershed Project Authority (SAWPA) executed a contract for a General Investigation Program with the U. S. Bureau of Reclamation (USBR), entitled Santa Ana Watershed Management Study, on October 7, 1987. The project is expected to cover a period of three years with 50 percent of the funds appropriated by SAWPA and 50 percent matching funds from the U. S. Bureau of Reclamation.

The study, which is extremely important to the implementation of water management concepts, which will result in significant water conservation, was funded by the Congress during Fiscal Years 1987, 1988 and 1989 with appropriations of $150,000, and $138,000 respectively. The study has been funded in the President's budget for Fiscal Year 1991.

During the California Water Commission Hearings, week of February 1, 1990, the Water Commission did approve this matter for recommendation to the Congressional Delegation on behalf of SAWPA in the above-mentioned amount.

I plan to be in Washington D.C. March 28 - April 5, 1990, when your Committee will be holding hearings on the appropriation bill, and I respectfully request the opportunity to appear before your Committee in support of this very vital water management project. I am enclosing a summary of the Study which I will describe briefly as part of my testimony at the hearing.

Total Water Quality Management—SAWPA's Commitment to the Community

United States House of Representatives
Committee on Appropriations
March 26, 1990
Page two

We, at SAWPA, sincerely appreciate your assistance in scheduling the opportunity to appear before your Committee to testify on behalf of the SAWPA Project, and as part of the California State Water Commission presentation.

Respectfully,

Roger A Shintaku

Roger A. Shintaku
Assistant General Manager

enclosure

RAS/slm/c:\wp\roger\wash2

PROJECT SUMMARY

Mr. Chairman, my name is Roger Shintaku, Assistant General Manager of the Santa Ana Watershed Project Authority (SAWPA). I appreciate the opportunity to submit SAWPA's request for funding of a planning project under the general investigation program of the Bureau of Reclamation.

SANTA ANA WATERSHED MANAGEMENT STUDY

SAWPA is the local sponsor of the Bureau of Reclamation's Santa Ana Watershed Management Study. This important study could lead to a unified water management concept which could result in significant water conservation. The Santa Ana Watershed is currently losing thousands of acre-feet of water to the ocean while at the same time importing supplemental water at a cost of $200 per acre foot. This investigation will put in place the framework for reducing the need for supplemental water by full use of local supplies. The fiscal year 1990 budget includes an appropriation of $99,000 for this study as part of the Bureau of Reclamations general investigations program. We respectfully request support for continued appropriations of $99,000 to match local funding of the same amount in fiscal year 1990.

A summary is enclosed.

SANTA ANA WATERSHED MANAGEMENT STUDY

BACKGROUND

The Santa Ana River watershed comprises approximately 2,200 square miles in portions of San Bernardino, Riverside, Los Angeles and Orange Counties. It contains a population of about 3.5 million persons and is one of the fastest growing areas of the United States. Copious supplies of groundwater facilitated extensive agricultural development and urban growth. In recent decades, however, local water supplies were not sufficient to keep up with the demand, and now water is being imported into the area to supplement local supply. In the future, import water is expected to cost up to $300 per acre foot. Consequently, making optimum use of the basin's local supply is imperative.

A key element of the basin's water supply is the groundwater basin under the San Bernardino Valley, both because of the amount of water it provides for overlying agricultural and municipal purposes, and because of its potential to capture and hold spring runoff if storage capacity is available there.

The Santa Ana Watershed Project Authority was established to provide oversight of the water supply and quality of the entire basin. It functions as a cooperative union of five member agencies with together cover the entire basin, namely: Chino Basin Municipal Water District; Orange County Water District; Western Municipal Water District; Eastern Municipal Water District, and San Bernardino Valley Municipal Water District.

Recognizing that the management of the local water resources in the basin are not at an optimum and that improved management could yield more of this costly commodity than at present, SAWPA has requested that Reclamation conduct a planning study which would develop an operating plan that facilitates more efficient use of the local resource.

Numerous other water agencies and flood control agencies in the basin water resources and are thus also vitally interested in the prospects for improved management.

OBJECTIVES OF STUDY

The objective of the Santa Ana Watershed Management Study is to develop a program for the long-range management of the upper Santa Ana River Watershed, to achieve the greatest practical yield of water occurring locally in the watershed. In order to do this, coordinating groundwater recharge is necessary, using local and imported water with extraction of water for use in a flexible plan that can cope with years of high runoff and low runoff and reasonably meet all demands put on the groundwater basin. In other words, a plan should balance out the local water supply for wet and dry periods, which tend to occur in erratic cycles.

Based on past and present water supply conditions in the Basin, this objective is anticipated to involve the construction of physical facilities to extract water from basins and convey it elsewhere for direct use or for storage.

The ultimate product of this process would be a planning report which would, after public review, be submitted to Congress for authorization of Federal funding for works that need to be constructed. Integrated into this report would be sufficient documentation to satisfy the reporting requirements of the National Environmental Policy Act. Perhaps even more importantly, the report would contain a plan of operation for the Basin that would have the concurrence of involved water interests.

PROBLEMS TO BE ADDRESSED

The following problems will be addressed, individually or in combination, as part of the plan formulation process.

1. THe watershed sporadically looses large quantities of water to the ocean during periods of high runoff.
2. High water table in the San Bernardino area is causing damage to public and private buildings and aggravates the risk of seismic disturbance in the event of an earthquake.
3. A technical "overdraft" situation exists in the San Bernardino Groundwater Basin despite a surplus of water in the lower-elevation portion of the Basin. This stems from institutional constraint on remedies.
4. The groundwater basin in the Yucaipa area is overdrafted.
5. The Chino Basin has unused storage capacity for water, and is at the same time losing water from its lower-elevation areas.
6. Institutional barriers prevent exchanges of water which would provide fuller utilization of the local supply.
7. Groundwater pollution is occurring in certain areas of the basin and is degrading water quality, preventing its use for municipal purposes and degrading water quality in the lower part of the basin.
8. The basin is not self-sufficient in water supply, but relies on supplemental import water. The import water supply may be insufficient to meet short term needs during critical shortage periods.

STUDY PHASES

The Santa Ana Watershed Management Study will involve three successive phase. Generally, each phase will involve narrowing the range of alternatives under consideration, and increasing degrees of detail.

The first phase of the study will be to make a preliminary evaluation of the project to determine whether a viable solution exists. The evaluation will involve scoping the range of alternatives to be considered, a preliminary shakeout of alternatives to determine likely candidates, and the evaluation of one or two of the best to demonstrate that a viable solution exists. At the end of this phase, an Internal Preliminary Finding Memorandum will be prepared to present the results of this phase and recommendations on proceeding with more detailed study. A detailed plan of work for the remainder of the study will also be prepared, building upon the experience gained in the preliminary phase.

The second phase will involve the formulation and evaluation of definite project alternatives, using the preliminary alternatives as a starting point. A preferred alternative will be further refined and ultimately submitted to Congress for consideration of construction authorization. Toward the end of this phase, when the alternatives have been formulated and evaluated and a preferred project plan has emerged, a Plan Formulation Working Document will be prepared to document the process alternative. Based on the environmental analysis to this point, and a public scoping meeting, a decision will be made during this phase as to whether an Environmental Statement is needed for the project, or whether a simpler environmental assessment will suffice.

The third phase will involve refinement of the preferred alternative to add all the details needed to make it complete and fully capable of implementation. During this phase the planning report and integrated environmental document will be prepared for official public distribution.

STUDY ACTIVITIES

The following are the major activities to be performed during this study.

Review of Existing Studies. The various planning studies that have been prepared in connection with the basin will be evaluated and desireable features will be used to prepare a preliminary array of alternatives.

Water Supply and Demand Projections. Projections of future water demand and supply in the basin need to be prepared and evaluated.

Groundwater Basin Analysis. The San Bernardino Groundwater basin will be analyzed be means of available digital models. The various operating scenarios developed in connection with the various project alternatives would be analyzed both to help formulate the alternatives and to analyze there benefits. The groundwater management and use practices of numerous local water Districts.

Santa Ana River Basin Analysis. The river basin would be analyzed using available digital models, and this operation coordinated with the analysis of groundwater basin analysis.

Water rights Compilation. Water rights, adjudications and other agreements will be catalogued and abstracted in terms that permit their scrutiny in connection with the development and analysis of alternative management plan.

Water System Design and Costing. Water system features to move water from areas of high groundwater to other areas will be located and planning designs and cost estimates made.

Benefit Studies. The monetary benefits of the project will be estimated to determine the feasibility of the project.

Financial Analysis. A financial plan will be developed to show the amount of repayment required, and how funds for repayment would be generated locally.

Environmental Studies. Studies to determine the environmental impacts of the project will be completed. At present, the nature and scope of these potential impact are not known. They will probably include some minor effects on wetland, and the usual construction impacts. The U.S. Fish and Wildlife Service will be asked to evaluate the effects the project will have on wildlife habitat, and to provide recommendations during plan formulation.

Social Analysis. This will determine the social impacts and effects that need to be considered in decision making and plan selection. The planning process is an alternative process in which alternative are formulated first subjected to a preliminary analysis, then refined and subjected to more detailed analysis. Anywhere in the process changes may occur form suggestion or inconsistencies and generate additional alternatives to examine. In this framework, the activities cited above are done in increasing levels of detail as project plans gradually become more complete and refined.

GENERAL PRINCIPALS AND GUIDELINES

This will consist of formulating several meaningful alternative management plans and necessary project features. First, a plan or plans would be formulated to best use available water resources and serve local needs without regard to institutional constraints. Then institutional constraints would be overlaid to identify constraints that might be relaxed or changed to permit best use of local water resources. Finally, after review of the results, several alternatives will be selected for evaluation and analysis.

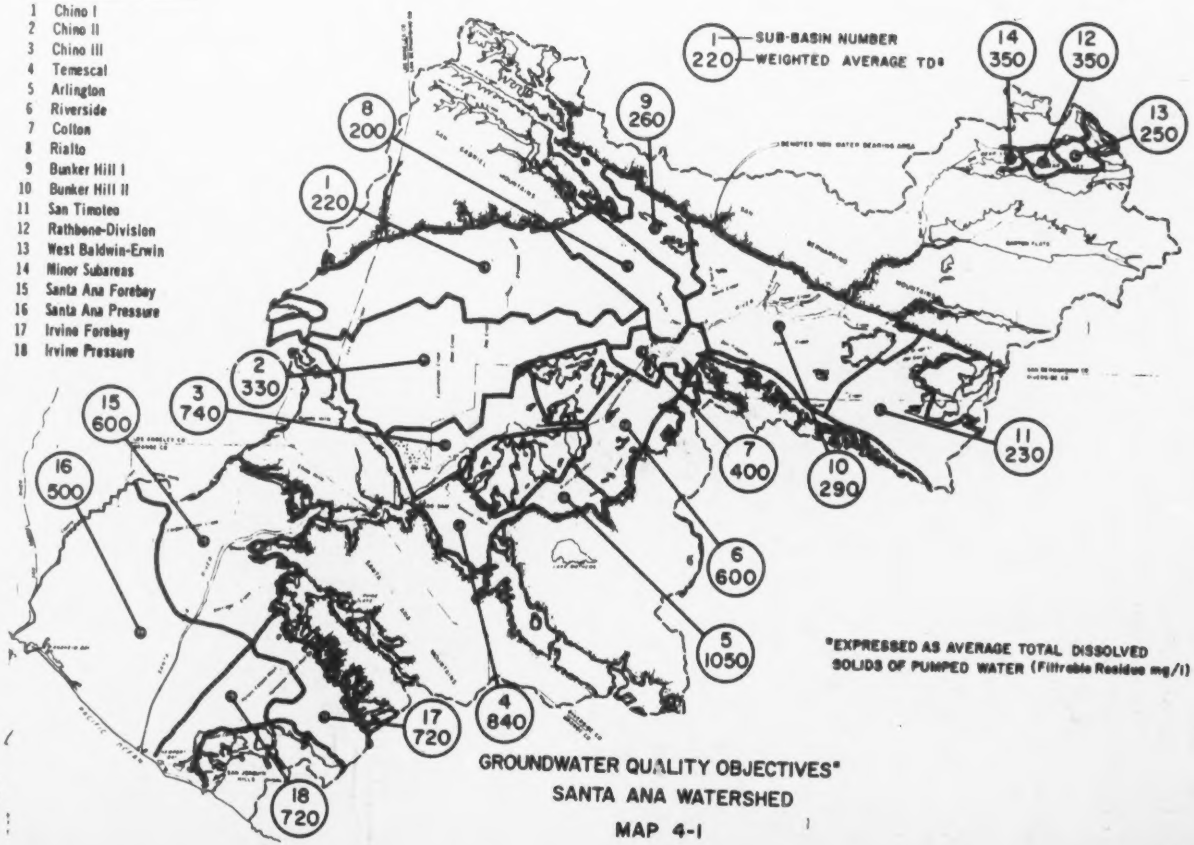
General criteria for formulating alternative are that: (1) Water originating in the basin would be used in the basin; (2) Equity be achieved among basin water users; and (3) The plan must meet the tests of completeness, effectiveness, efficiency, and acceptability, as defined in Federal Principal and Guidelines for Planning Water Resource Projects.

This planning study and formulation of a locally supported plan cannot be accomplished by Reclamation or any other agency alone. Reclamation will rely on a high degree of interaction and cooperation with local interests. At key times, personnel from SAWPA and its member agencies will work along side the U.S. Bureau of Reclamation planners in the formulation and evaluation of alternatives.

In accord with Federal guidelines for planning, the public will be kept informed of study activities and comments input on various issues will be sought for the study. A public meeting will need to be conducted to scope the environmental issues to be dealt with in the study, in order to comply with NEPA.

BUDGET

In-Kind Services: The local contribution to the San Bernardino Groundwater Project will consist partly of in-kind services performed or procured by SAWPA, its constituent agencies, or other local entities. Such in-kind services will include, but not be limited to the following: (1) Compiling and abstracting water rights and related local legal issues; (2) Adaptations of existing water supply operation models for use in the study, and providing them for use in the study; (3) Providing the services of various technical people form the staffs of local water agencies to work closely with the U.S. Bureau of Reclamation during various phases of the study; (4) Providing the services of outside experts in various phases of water management for participation with the U.S. Bureau of Reclamation planning activities as needed to assure a quality product; (5) Analyzing water quality aspects of project alternatives; (6) Making local arrangements for public meetings; and (7) Printing various public information and technical documents for use during the study.



SUBBASIN IDENTIFICATION

1	Chino I
2	Chino II
3	Chino III
4	Temescal
5	Arlington
6	Riverside
7	Colton
8	Rialto
9	Bunker Hill I
10	Bunker Hill II
11	San Timoteo
12	Rathbone-Division
13	West Baldwin-Erwin
14	Minor Subareas
15	Santa Ana Forebay
16	Santa Ana Pressure
17	Irvine Forebay
18	Irvine Pressure

1 — SUB-BASIN NUMBER
220 — WEIGHTED AVERAGE TD*
1 220
2 330
3 740
4 840
5 1050
6 600
7 400
8 200
9 260
10 290
11 230
12 350
13 250
14 350
15 600
16 500
17 720
18 720
SAN GABRIEL MOUNTAINS
SAN BERNARDINO MOUNTAINS
SANTA ANA MOUNTAINS
PACIFIC OCEAN
DENOTES NON WATER BEARING AREA

*EXPRESSED AS AVERAGE TOTAL DISSOLVED SOLIDS OF PUMPED WATER (Filtrable Residue mg/l)

GROUNDWATER QUALITY OBJECTIVES*
SANTA ANA WATERSHED
MAP 4-1

Mr. **Fazio**. Thank you.

Mr. **Hill**. Thank you very much.

Our next speaker, Mr. Terry Paxton, Director of Engineering Service Flood Control Planning, City of Sacramento.

Mr. **Paxton**. Mr. Chairman and Members of the subcommittee, my name is Terry Paxton, and I appear before you on behalf of SAFCA, which is the appropriations for what he just described here.

I am here today to thank the subcommittee and request your continued support for our projects. For the American River Watershed Feasibility Study, it's requested that the committee support a reprogramming effort, if necessary, to share completion of that project.

Additionally, we are requesting $300,000 be added to the President's budget to complete the environmental impact statement for our Reoperation Study of Folsom.

In closing, I would like to thank the subcommittee for the help that we have had and especially to our Congressman Vic Fazio and Matsui for their strong support in getting our projects off the ground.

Thank you.

[The statement of Terry Paxton follows:]

TESTIMONY
of
SACRAMENTO AREA FLOOD CONTROL AGENCY
SACRAMENTO, CALIFORNIA
APRIL 4, 1990

BEFORE

UNITED STATES HOUSE OF REPRESENTATIVES
COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
HONORABLE TOM BEVILL, CHAIRMAN

FOR SUPPORT OF APPROPRIATIONS

TO COMPLETE

AMERICAN RIVER WATERSHED AND SACRAMENTO
METROPOLITAN FEASIBILITY STUDIES

TO START

AMERICAN AND SACRAMENTO RIVER
PRECONSTRUCTION ENGINEERING AND DESIGN

TO CONTINUE

SACRAMENTO URBAN AREA LEVEE RECONSTRUCTION PROJECT
and
FOLSOM REOPERATION STUDY UNDER OPERATION AND MAINTENANCE GENERAL
SCHEDULE OF RESERVOIR OPERATIONS

Dear Mr. Chairman and Members of the Subcommittee:

My name is Terry L. Paxton, Director of Engineering Services of the Sacramento Area Flood Control Agency (SAFCA) a joint powers organization formed in October 1989 with the specific objective to obtain regional solutions to the flood control problems facing the greater Sacramento area.

I appear before you on behalf of this agency which includes the City of Sacramento, Sacramento County, Sutter County, Reclamation District 1000, American River Flood Control District, Sacramento Area Water Agency and the Sutter County Water Agency. The constituency of these member agencies totals approximately 1.5 million of which 350,000 live in flood prone areas having depths of flooding of up to 25 feet.

I am here today to thank the Subcommittee on behalf of SAFCA and its constituency and to request your continued support of our projects. For the American River Watershed and the Sacramento Metropolitan Area Studies it is requested that the committee support reprogramming of funds, if necessary, to assure completion of these feasibility studies. It would appear that the amount of money set aside in the President's budget for the American and Sacramento River Preconstruction Engineering and Design and the Sacramento Urban Area Levee Reconstruction project is adequate for FY91.

Additionally we are requesting that $300 thousand be included in the President's budget to complete the environmental impact statement for the Folsom Reoperation Study under Operation and Maintenance General. The reoperation of Folsom Reservoir for a finite period will be an essential component of Sacramento's omnibus flood control program and we need to be fully prepared to reoperate at the time when the project is authorize, hopefully by October 1992.

The local funding for the American River Watershed Study has been included in the existing budgets of the various affected agencies and over $11 million is available to pay the locals' share of the non-federal cost of the Sacramento River Urban Area Levee Reconstruction Project. The various agencies have set this money aside in advance of its actual need in order that the project can be completed in as short a time frame as possible.

This stepping out and actually providing advanced cost shared funds prior their actual need demonstrates that we are united and committed to expediting additional flood protection to the greater Sacramento area. Another witness to this commitment was the development in early 1990 of a consensus on what type of upstream flood control facility that the Corps should continue to analyze in the American River Watershed Study. Both SAFCA and the State Reclamation Board, the local sponsor, have adopted resolutions requesting the Corps to continue their studies and consider constructing an expandable dam at Auburn and raising certain levees and controlling flows in the Natomas area as the locally preferred project.

Before closing I would like once more to express our gratitude to the Subcommittee and the Sacramento Area's Congressional Delegation, especially Congressmen Vic Fazio and Robert Matsui, for their strong support this last year in encouraging the Corps of Engineers to undertake, without delay, the reconstruction of the existing Sacramento River levee system. Additionally, I would like to state that the help and cooperation we have received this year from the Corps of Engineers in identifying and finding solution to our flood problems was commendable.

Thank you for your consideration and continued support.

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Mr. HILL. Thank you very much.

Our next speaker, Ben Austin, Second District, Supervisor, County of Kern. You have heard from him before.

Mr. AUSTIN. Good morning, Mr. Chairman. Thank you very much for the opportunity to testify before this subcommittee as I have in the past.

I am Ben Austin, the Second District Supervisor from Kern County. I have with me Stu Pyle, who is a Manager of the Kern County Water Agency. Mr. Pyle was recently selected by his peers as the California Water Leader of the Year for the State of California.

Mr. FAZIO. Stu, why don't you stand up. Everybody knows you, but you might as well take a bow.

Mr. AUSTIN. I am here on behalf of Kern County to request a $250,000 addition to the President's proposed budget to continue work on the Kern County Creek Project.

This money will be cost shared by the local interests to continue the feasibility level investigation of the solution to the flooding problem.

Caliente Creek is a major problem with a recorded flooding since 1932. This 1932 flood killed 17 people.

In 1978 and 1983, damages totaled $36 million. This area now is experiencing extensive urban development. We are asking for your help and your continued support for the county project.

I would like to thank Mr. Fazio for all of his help over the years, and the Corps of Engineers has been very, very helpful in this project.

[The statement of Ben Austin follows:]

TESTIMONY of Ben Austin, Supervisor
Second District, Kern County
In support of FY 90-91 appropriations
for Caliente Creek Flood Control Project,
U.S. Army Corps of Engineers
before the

United States House of Representatives
Committee on Appropriations
Subcommittee on Energy and Water Development
Honorable Tom Bevill, Chairman
April 4, 1990

Dear Mr. Chairman and Members of this Subcommittee:

I am Ben Austin, Second District Supervisor of Kern County, California. With me is Stuart T. Pyle, General Manager of the Kern County Water Agency, the leading local sponsor for the Corps of Engineers' Caliente Creek Flood Control Project. We are here today to request a $250,000 addition to the President's Proposed Budget to continue work on the Caliente project. This money will be cost-shared by Agency, County and other local interests to continue the feasibility-level investigation of solutions to the Caliente flooding problem.

The feasibility report that was completed in December, 1988, recommended a single flood detention reservoir and two flood channels. During the Washington-level review of that recommended project configuration, previously unknown sedimentation problems were found, and have resulted in a determination that the recommended project is technically infeasible. We were officially advised of this determination by the Corps on February 9, 1990, at a meeting of the local Caliente Creek Flood Control Task Force.

We are disappointed, of course, but we are determined to go on. As you know, the Caliente project is the first federal project in the nation for which local interests cost-shared 50 percent for the feasibility study. Please be assured that we remain totally committed to resolving the Caliente flooding problem. We are willing to cost-share the work necessary to continue the feasibility study on other project alternatives and make a new recommendation. This time around, we will get the right project. We are right now negotiating to implement a two-phase cost-sharing agreement. We are proposing to implement the first phase now on work needed to confirm and finalize the sedimentation study results. The Agency and the County propose to make $30,000 in local payments through June of this year. We are working with the Corps to determine the extent of the sediment study costs, and we will commit the balance of our share of the studies in the next fiscal year. We expect to complete the sediment work by the end of this year, and will use our sediment conclusions to select the other project alternatives to pursue at the feasibility level. We will then negotiate the terms for and implement the feasibility-level work phase of the cost-sharing agreement.

Meanwhile, work continues among the Agency, the County, Arvin-Edison Water Storage District, Kern Delta Water District, Lamont Storm Water District and the City of Arvin to define and implement appropriate local institutional structure to assume the local cost-sharing responsibility for project construction costs and operation and maintenance functions. These local sponsors have already spent more than $1.3 million in cash and in-kind services to cost-share and facilitate the feasibility study.

Our Caliente Creek flooding problems may be small to the Congress and the Corps of Engineers, but to us, Caliente Creek is a major problem with recorded flooding since 1932. We cannot afford repetition of these devastating floods, which most recently occurred in 1978 and 1983, together causing more than $36 million in damages. Since those floods, the area is seeing extensive new urban development, a result of the Los Angeles-area overflow into many parts of Kern County. We have no choice but to find the right solution, and we need your help.

Mr. Chairman, we deeply appreciate your past support of the Caliente project, and urge your continued support.

Mr. Fazio. Thank you.

Mr. Hill. Thank you, Ben.

Our next speaker is Carl Blum, Assistant Deputy Director, Los Angeles County Public Works.

Mr. Blum. Good morning, Mr. Chairman, and Members of the committee. On behalf of Los Angeles County, we support the allocation, the budget allocation to the U.S. Corps of Engineers for the Los Angeles County Drainage Area Project.

We are deeply appreciative of the continued support of this esteemed committee for the largest of all urban flood control systems.

We strongly support the California Water Commission's recommendations to the committee for $2 million to fund the preconstruction engineering and design phase of the LACDA project.

Because of the threat to public and private properties caused by inadequacies in major elements of this flood control system within a primary population center of the United States, we further urge that Congress consider authorizing construction of the remedial work to this Federal project as soon as possible.

Thank you very much.

[The statement of Carl L. Blum follows:]

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

A PRESENTATION OF THE FLOOD CONTROL NEEDS IN LOS ANGELES COUNTY

FEDERAL FISCAL YEAR 1991

United States House of Representatives
Committee on Appropriations
Subcommittee on Energy and Water Development
Honorable Tom Bevill, Chairman

BY
CARL L. BLUM, ASSISTANT DEPUTY DIRECTOR
DEPARTMENT OF PUBLIC WORKS, LOS ANGELES COUNTY, CALIFORNIA

Summary of recommendation by Los Angeles County Department of Public Works concerning budget allocations to the U.S. Army Corps of Engineers.

> Los Angeles County Drainage Area (LACDA) - We are deeply appreciative of the continued support of this esteemed Committee for this largest of all urban Flood Control systems. We strongly support the California Water Commission's recommendation to the Committee for $2 million to fund the Preconstruction, Engineering, and Design (PE&D) phase of the LACDA project. Because of the threat to public and private property caused by inadequacies in major elements of this flood control system within a primary population center of the United States, we further urge that Congress consider authorizing construction of the remedial work to the Federal project just as soon as possible.

Mr. Chairman and Gentlemen:

Floods are a part of the history of the Los Angeles basin. Widespread floods have periodically devastated vast areas of the basin and were responsible for the taking of lives, damaging property, and interrupting commerce and trade. The level of flooding was so great, that at times, the County was isolated from the rest of the nation.

The Corps of Engineers and County of Los Angeles, through its Flood Control District, have built one of the most extensive and sophisticated flood control systems in the world. Construction of the major elements of the system began in the 1930's. Since the major segments were completed, it is estimated that the system has prevented $3.3 billion in potential flood damage.

Development which occurred after World War II exceeded the projections the designers made in the 1930's and has increased runoff to the point where, even in a moderate storm, the runoff could exceed the design capacity of the system. Portions of the system are seriously deficient. For example, the lower Los Angeles River in the City of Long Beach can only carry runoff from a 40-year storm, and came close to overtopping in 1980. A flood of greater magnitude would have a tremendous impact, both personal and economic, on Los Angeles County, the nation's second largest metropolitan area.

Therefore, at the request of Los Angeles County, the U.S. Army Corps of Engineers has been analyzing the adequacy of the existing major flood control facilities serving the Los Angeles basin in the LACDA Review Study. In 1987, the Corps of Engineers completed the problem identification phase of the Study. We are pleased to report that the Corps has made tremendous progress in the past year and is rapidly nearing completion of this important Study.

The problem identification phase identified 100-year flood damages totaling $2.25 billion covering an 82 square-mile area which houses 625,000 people. A 500-year flood would inundate 193 square-miles and cause $5.1 billion in damages. All these damages would occur in the heavily urbanized Los Angeles basin.

These potential damages are similar to those identified for the Santa Ana River project in nearby Orange County. By comparison, in a 100-year flood, the Santa Ana River could flood a 60 square-mile area, causing $3.0 billion in damages, affecting 310,000 people.

To mitigate the flood threat of the Los Angeles River, the Corps of Engineers reviewed alternative solutions during the last several years. The Corps of Engineers conducted a feasibility conference in March of this year. Being considered at this time is a project involving increasing the effective height of the levees and raising some of the bridges along the Los Angeles River below South Gate and on the Rio Hondo channel south of Whittier Narrows Dam. This is anticipated to cost approximately $250 million. This project will have an extremely favorable cost-benefit ratio and provide protection from a greater than 100-year storm.

The Corps of Engineers has done an outstanding job of maintaining the schedule to complete the Feasibility Study by August 1990. Completion of the study should be followed by Preconstruction, Engineering, and Design (PED).

It is estimated that PED would take four and one half years with a total expenditure of $12 million. Therefore, we strongly urge that Congress include $2 million in the President's budget for Fiscal Year 1991 so plans can be developed and the project constructed as soon as possible. Because of the magnitude and seriousness of the problem, we also urge the Congress to consider authorizing construction of the remedial work at the earliest possible date.

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Mr. **Fazio**. Thank you.

Mr. **Hill**. Thank you very much.

Our next speaker, Mr. Gaddi Vasquez, Supervisor of County of Orange in Santa Ana.

Mr. **Vasquez**. Members, it's a pleasure to be here, and in advance, I would like to thank you all of the support that you have given our projects in Orange County and in other jurisdictions affecting Orange County.

I am, as mentioned, Gaddi Vasquez, Supervisor of Third District in Orange County, California, and I am here to request your support for appropriations to continue the construction of the Santa Ana River Mainstream Project.

The Corps of Engineers considers the Santa Ana River the greatest flood threat in the West, endangering three million people and possibly, as you have heard this morning, killing 3,000 people, destroying hundreds of homes, or $18 billion, rather, of property.

Orange County Supervisors are keenly aware of the seriousness of the flood threat and have accumulated funds for the past 10 years totaling about $150 million.

Local response or costs are now estimated at 36 percent of the project total cost, substantially above the 25 percent minimum requirement, and Orange County's share is about $445 million.

Orange County in advance of a construction start and a signed local cooperation agreement initiated substantial land acquisition and relocations now estimated at about 2,000 acres, and Orange County has spent about $11 million to date before the LCA was signed in December of 1989 and plans to spend an additional $100 million for the balance of this and the next fiscal year.

This work prepares a way for construction by the Corps of Engineers in accordance with its schedule in allowing the Corps to fully utilize the appropriations requested for fiscal year 1991.

By these actions, Orange County demonstrates its commitment and willingness to contribute substantial monies to this project.

I urge your support of Federal appropriations needed in fiscal year 1991 to continue construction of the Santa Ana River Mainstream Project on schedule, and to provide much needed protection, flood protection to the people of Orange County at the earliest possible date.

And again, I thank you in advance for the support you have given in the past and in the future.

[The statement of Gaddi Vasquez follows:]

GADDI H. VASQUEZ
SUPERVISOR, THIRD DISTRICT
ROBERT E. THOMAS HALL OF ADMINISTRATION
10 CIVIC CENTER PLAZA, SANTA ANA, CALIFORNIA 92701-4061
PHONE: 834-3330 (AREA CODE 714)

UNITED STATES HOUSE OF REPRESENTATIVES
COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
HONORABLE TOM BEVILL, CHAIRMAN

A. SUMMARY

This is a request by Orange County, California for your support of an appropriation of $65 million to continue construction of the Santa Ana River Mainstem Project.

The U. S. Army Corps of Engineers considers the Santa Ana River to be the most critical flood threat in the West. The most severe flood likely to occur could kill 3,000 people and destroy property valued at $18 billion.

The Flood Control Districts of Orange, Riverside and San Bernardino Counties have entered into a Local Cooperation Agreement for the project to provide a minimum of 25% to the total project cost. Local Sponsors' costs are now estimated to equal 36% of the total project cost.

Orange County's share of this billion dollar project is about $445 million. Orange County has demonstrated its commitment to the project by allocating about $150 million to the project to date; this figure may reach $180 million or 40% of its share by the end of our next fiscal year.

In advance of Federal appropriations for construction or execution of a Local Cooperation Agreement, the Local Sponsors have initiated substantial land acquisition for the new Seven Oaks Dam, the expanded Prado Dam Reservoir and for lands at the mouth of the Santa Ana River. Orange County has spent about $13 million to date and plans to spend an additional $100 million for the balance of this and next fiscal year.

By these actions, Local Sponsors have demonstrated their commitment and willingness to contribute substantial monies to this critical project. Work currently under way provides the real estate and relocations needed to prepare the way for the Corps of Engineers to construct the project according to its current schedule. It allows the Corps to fully utilize the $65 million of Federal appropriations requested for fiscal year '91.

Your support of appropriations for continued construction of the Santa Ana River Mainstem Project is urged to provide its citizens of Orange, Riverside and San Bernardino Counties with urgently-needed flood protection as early as possible.

B. PREPARED STATEMENT

Mr. Chairman and Members, I am Gaddi Vasquez, Supervisor of the Third Supervisorial District of Orange County, California representing Orange County and the Orange County Flood Control District as one of the Local Sponsors which include Riverside and San Bernardino County Flood Control Districts for the Santa Ana River Mainstem Project.

The U.S. Army Corps of Engineers identifies the Santa Ana River as the most critical flood threat in the West. A major flood along the river would flood over 110,000 acres, endanger over 3 million people and 255,000 structures in Orange, Riverside and San Bernardino Counties. Such a flood could kill 3,000 people destroying property valued at $18 billion.

The total cost of the Santa Ana River Mainstem Project to provide flood protection is estimated to be about $1.3 billion. Orange County, as the major beneficiary, has a share of about $445 million.

The Orange County Board of Supervisors recognizing the flood threat from the Santa Ana River, the urgent need for protection and the need for greater cost-sharing by Local Sponsors has allocated about $150 million to support the Project over the past eleven years. This will increase to about $180 million or 40% of Orange County's total share in our next fiscal year.

Local Sponsors, in advance of a "construction-start" and a signed Local Cooperation Agreement, initiated substantial land acquisition and relocations. Orange County also advanced $3 million to the Corps of Engineers to accelerate preparation of the General Design Memorandum, Phase II to provide a firm base for a construction start and for final design of each feature of the project.

The Local Sponsors have entered into a Local Cooperative Agreement with the Department of the Army to provide all lands, easements, rights-of-way, relocations and disposal sites required for the project. Orange County spent about $11 million before the LCA was signed in December, 1989 and plans to spend an additional $100 million for the balance of this and next fiscal year. This work prepares the way for construction by the Corps of engineers in accordance with its schedule allowing the Corps to fully utilize the appropriations requested for Fiscal Year '91.

Work currently under way by the Local Sponsors includes surveying, right-of-way engineering, appraisals and land acquisitions for the Seven oaks Dam and mitigation lands at the mouth of the river. Orange County has initiated surveys for lands needed for the expanded Prado Reservoir and for widening the lower Santa Ana River Channel. Relocation of the Katella Bridge is completed and relocation of the Pacific Coast Highway, Talbert, Hamilton-Victoria and Orangewood Bridges as well as the Talbert Channel Outlet to the Ocean is in progress. Local Sponsors are jointly preparing for the relocation of the Southern California Edison Hydroelectric Plant at the Seven Oaks site.

We receive confidence in continuing work on the project by the fact that President Bush includes $65 million for continued construction on the SAR Mainstem Project in his Fiscal year 1991 Federal Budget. I believe

Local Sponsors have demonstrated their support and commitment to the project to the extent of allocating funds and performing work in advance of any guarantee by the Federal Government. Therefore, consistent with the U.S. Army Corps of Engineers' concern for the serious threat to the Citizens of Orange, Riverside and San Bernardino Counties, we respectfully request your support of the $65 million for continued construction of the Santa Ana River Mainstem Project-contained in President Bush's budget.

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Mr. LEWIS. Mr. Chairman, if I might interpose. Thank you, Mr. Chairman.

It seems to me that it might be appropriate to mention that the Boards of Supervisors of the three counties involved, Orange, Riverside, and San Bernardino, have been under no small amount of pressure regarding first the threat on the one hand but also the cost sharing that is involved.

In Orange County's case, it's a very substantial cost sharing for which they have prepared significantly over the years. The elected members of the Board of Supervisors have been really outstanding in their cooperative effort, came together with that agreement a few months ago, is most important to the project, and they are to be congratulated for that effort.

Mr. VASQUEZ. Thank you very much, Congressman.

Mr. FAZIO. It has been a very good working relationship with Orange County, but it's the good support of Riverside and San Bernardino that has made it possible politically to move forward, and I think Mr. Lewis and Mr. Brown are particularly to be thanked, so that Orange County's problems can be addressed.

Mr. VASQUEZ. I would concur.

Mr. BEVILL. I know firsthand it's a critical project.

Mr. VASQUEZ. Thank you, Mr. Chairman. Appreciate it.

Mr. HILL. Our next one is Mr. Ken Edwards, Chief Engineer of Riverside County Flood Control District.

Mr. EDWARDS. Mr. Chairman, I am Chairman of the Riverside County Flood Control District. I am emphasizing our support, along with Supervisor Vasquez and Supervisor Hammock.

Riverside County fully supports and urges the appropriation of $65 million. Our part is small compared to Orange County, but we have some $13 million of our own funds set aside for this project in the next fiscal year.

Another project of concern to us, we would like the committee to fund a reconnaissance study on the Whitewater River Basin.

And in August of 1989, the House Public Works Committee adopted a resolution authorizing such a study, and we would like to see that study commence primarily on the Whitewater River Channel.

We also are just echoing our support of the continuing authority program. We do have a small project called Lake Elsnire Outlet Channel, which will require $5 million.

And we are very anxious, the plans are about complete, and we will hope that the funding will be available next fiscal year to proceed with that construction.

Thank you very much.

[The statement of Kenneth Edwards follows:]

1990

STATEMENT

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

REGARDING

SANTA ANA RIVER MAINSTEM

WHITEWATER RIVER BASIN

LAKE ELSINORE, CALIFORNIA

TO: UNITED STATES HOUSE OF REPRESENTATIVES
COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON ENERGY AND DEVELOPMENT

HONORABLE TOM BEVILL
CHAIRMAN

SUMMARY RECOMMENDATIONS

SANTA ANA RIVER - MAINSTEM Construction - General	$65,000,000
WHITEWATER RIVER BASIN, CALIFORNIA Reconnaissance Study	$340,000
LAKE ELSINORE, CALIFORNIA Small Flood Control Project	

Respectfully submitted,

Melba Dunlap

MELBA DUNLAP, Chairman
Board of Supervisors
Riverside County Flood Control
and Water Conservation District

SANTA ANA RIVER - MAINSTEM

The Water Resources Development Act of 1986 (Public Law 99-662) authorized the Santa Ana River - All River project which includes improvements along the river in Orange County, enlargement of Prado Dam and Reservoir near Corona, California, construction of a new dam (Seven Oaks) near the entrance to Santa Ana Canyon, improvement of the Oak Street Drain Channel in Corona, California, improvement of Santiago Creek in Orange County and various mitigation features as set forth in the Chief of Engineers' Report to the Secretary of the Army. The Boards of Supervisors of Orange, Riverside and San Bernardino Counties are in support of this needed project and have so stated in past resolutions to Congress.

The Local Cooperation Agreement (LCA) was signed in December 1989 by the three local sponsors and the Army. Construction is starting on the Seven Oaks Dam in the Spring of 1990. This project element will take about six years to complete. Acquisition has also started on enhancement lands near the mouth of the river channel and the local sponsors have commenced acquisition of lands, easements, rights of way and disposal areas for Seven Oaks Dam and other elements of the project. The President has recommended that 65 million dollars be appropriated to continue this important long term construction project.

We strongly support the President's request for 65 million dollars to start this long awaited project and urge the Committee to approve the funds in the Fiscal Year 1991 appropriations.

WHITEWATER RIVER BASIN

The Whitewater River, as it flows through the Coachella Valley area of Riverside County, California, cannot contain large flood flows within its banks and thus can cause extensive damage in the event of a large flood. This area of Riverside County is experiencing rapid development. The river passes through the Cities of Palm Springs, Cathedral City, Rancho Mirage, Palm Desert and Indio on its way to the Salton Sea.

In 1989, the House Committee on Public Works and Transportation, SubCommittee on Water Resources adopted a resolution authorizing a study of the Whitewater River Basin in the Coachella Valley.

The Coachella Valley Water District and the Riverside County Flood Control and Water Conservation District are requesting that a reconnaissance phase feasibility study be performed to evaluate flooding problems along the Whitewater River and some of its major uncontrolled tributaries to determine if flood control improvements are deemed feasible. If a project is found to appear feasible, the two Districts are prepared to participate in a 50/50 cost shared detailed Survey Report Study with the Corps of Engineers.

The Los Angeles District of the Corps of Engineers estimates that a reconnaissance study would cost $340,000. We request your committee approve $340,000 in the Fiscal Year 1991 Energy and Water Appropriation for the Whitewater River Basin reconnaissance study.

LAKE ELSINORE, CALIFORNIA

The Lake Elsinore Small Flood Control Project has been designed and is scheduled to start construction in Fiscal Year 1990. It is being funded through the Continuing Authority program. We ask your Committee and Congress to support sufficient funding in the Continuing Authority program for Fiscal Year 1991 to ensure funding of the Lake Elsinore Small Flood Control Project.

Whitewater River Stormwater Channel, Riverside, California

United States House of Representatives
Committee on Appropriations
Subcommittee on Energy and Water Development
Honorable Tom Bevill, Chairman

Most of the time the Whitewater River disappears quietly into the sand soon after entering Coachella Valley near Palm Springs in the southeastern California desert. Occasionally, though, it becomes a roaring torrent, threatening the 200,000 people and more than $10 billion in developed property located along its 50-mile-long flood plain.

Coachella Valley Water District and its predecessor Coachella Valley Stormwater District have worked since 1915 to channelize the river to protect valley residents and their property. The channelization has been effective in controlling the flash floods--limiting most damage to the flood control facilities themselves, which, consist of earthen banked channels designed to carry the largest anticipated flows safely around nine valley cities to the Salton Sea.

Repair to the earthen banks is costly after each flood, but private property generally is kept safe. Warm rains on mountain snows, however, occasionally create more threatening situations. In 1979, for instance, the channel flowed full for nine days and nights and Bulldozer operators from throughout Southern California were kept busy working 12-hour shifts in the flow to keep the earthen banks in place.

The U.S. Army Corps of Engineers helped Coachella Valley Water District battle that storm.

The Corps has studied the Whitewater River and its tributaries on and off since 1937. It completed the most recent study in 1979 without identifying a feasible solution to the flood problems. The Corps Coachella Valley Authority was established in 1982 to continue to seek a solution, but remained unfunded and must die under the provisions of the Water Resources Development Act of 1986 which removes authorization from studies which remain unfunded for five years.

Now, erosion proofing of Whitewater stormwater protective works appears to be a viable solution to reducing long term damages to facilities, but further study is needed.

A new Congressional resolution authorizing study has been approved, but funding is required before the Corps of Engineers can institute further work. The Corps proposes a one year reconnaissance phase with 100 percent federal funding at an estimated cost of $340,000 followed by a two to three year feasibility phase with 50-50 cost sharing. The feasibility phase would focus on analysis of alternatives and development of a recommended plan.

To continue with this project vital to the safety of Coachella Valley lives and property, the California Water Commission joins Coachella Valley Water District and the Riverside County Flood Control and Water Conservation District in urging funding of this study.

Mr. Hill. Thank you.

Our next, witness Mr. Robert Hammock, Supervisor of the County of San Bernardino.

Mr. Hammock. Thank you, Mr. Chairman, Members.

We are talking about two critical flood control projects. My prepared presentation has been provided to you for the record. Respecting your time and your abilities, I will make just one or two very brief points.

Of prime importance to San Bernardino is the Santa Ana River Project. Your support of the funding identified in the President's budget, $65 million, will continue the progress in developing very much needed flood control improvements in three counties in Southern California.

As you have heard, over three million residents of the three counties are subject to severe flooding. It's been estimated that a major storm in those three counties could incur billions and billions of dollars in property damage.

On another subject, I am pleased to advise you that all Federal funding on the Bureau of Reclamation Day Creek Water Project, the amount of $13.4 million was completed during the current fiscal year.

We want to thank the subcommittee for your past efforts in providing home funding which will enable the construction of this very much needed flood control improvement which will be completed, as I said, this upcoming fiscal year.

Thank you for that opportunity to testify.

[The statement from San Bernadino County follows:]

COUNTY OF SAN BERNARDINO FLOOD CONTROL PROGRAM
F.Y. 1990–91

Presented to

U.S. HOUSE OF REPRESENTATIVES COMMITTEE ON APPROPRIATIONS
Subcommittee on Energy and Water Development
Honorable TOM BEVILL, Chairman

Including

Corps of Engineers Project

SANTA ANA RIVER MAINSTEM

and

Bureau of Reclamation Water Projects

DAY CREEK and SAN SEVAINE CREEK

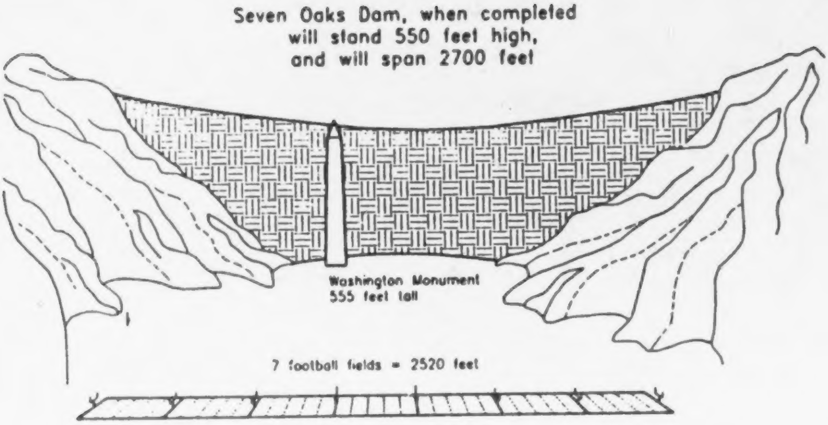
Artist's conception of the Seven Oaks Dam feature of the Santa Ana River Project

County of San Bernardino

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

State of California

1939


Seven Oaks Dam, when completed
will stand 550 feet high,
and will span 2700 feet
Washington Monument
555 feet tall
7 football fields = 2520 feet

COUNTY OF
SAN BERNARDINO

County Administrative Office

No. 1 Arrowhead Plaza, 5th Floor
385 North Arrowhead Avenue
San Bernardino, CA 92415-0120
(714) 387-5418
Telecopier (714) 387-5430

HARRY M. MAYS
County Administrative Officer

BOARD OF SUPERVISORS

Marsha Turoci	*First District*
Jon D. Mikels	*Second District*
Barbara Cram Riordan, *Chairman*	*Third District*
Larry Walker	*Fourth District*
Robert L. Hammock	*Fifth District*

March 26, 1990

United States House of Representatives
Committee on Appropriations
Subcommittee on Energy and Water Development
Honorable Tom Bevill, Chairman

Dear Chairman Bevill:

The Board of Supervisors of the San Bernardino County Flood Control District, State of California, appreciates the opportunity to bring the following critical flood control projects to your attention:

CORPS OF ENGINEERS

SANTA ANA RIVER MAINSTEM - Including Seven Oaks Dam, Mill Creek Levee, San Timoteo Creek, Oak Street Drain, and Santiago Creek.

This project is included in the President's Budget for FY 1990/91 in the amount of **$65,000,000**. Your support of funding will continue progress on developing important flood protection works for San Bernardino County, as well as Orange and Riverside Counties.

BUREAU OF RECLAMATION (Public Law 84-984 - Small Watershed Project Loan Program)

DAY CREEK WATER PROJECT - Federal funding of the $13.4 million loan on this $50 million flood control and water conservation project was completed during FY 1989/90. We wish to thank the committee for its past efforts in providing loan funding which has enabled the construction of flood control improvements to move forward in a timely manner. Thanks to your efforts, the project will be completed during FY 1990/91.

SAN SEVAINE CREEK WATER PROJECT - We take this opportunity to bring to your attention another important flood control and water conservation project for this County. A loan application is currently being processed by the Bureau for this project. Key features of the project are flood control and annual water conservation of an estimated 25,000 acre feet. We ask your future consideration and support.

The Board once again wishes to express its deep appreciation for your past and present support of these priority programs in San Bernardino County.

Very truly yours,

Barbara Cram Riordan
BARBARA CRAM RIORDAN
Chairman, Board of Supervisors

CORPS OF ENGINEERS

Santa Ana River Mainstem - "All River Plan" Project

Project Description

The Santa Ana River Mainstem - "All River Plan" Project when completed will provide the necessary flood protection for over two million people and hundreds of square miles of developed lands within Orange, Riverside and San Bernardino Counties. San Bernardino County area presently subject to overflow is shown in light blue on the adjoining aerial photo exhibit. To provide the urgently required protection the Corps of Engineers, along with San Bernardino, Riverside and Orange Counties as sponsors have entered into a local cooperation agreement on December 14, 1989 and planning to start construction in May 1990 improvements including Seven Oaks Dam, Mill Creek Levees and San Timoteo Creek Channel in the upper Santa Ana River watershed, and downstream improvements include the enlargement of Prado Dam, Oak Street Drain, Santiago Creek and thirty two miles of the Santa Ana River Channel from Prado Dam to the Pacific Ocean. San Bernardino County recommended improvements are also shown on the adjoining exhibit and a conceptual rendition of Seven Oaks Dam is superimposed on a photo of Santa Ana Canyon on the cover of this report. The completed project will also provide (a) enhancement and preservation of marsh land and wetlands for endangered waterfowl, fish and wildlife species (b) recreation amenities, and (c) flood plain management of the 30 miles of Santa Ana River between Seven Oaks Dam and Prado Dam.

Project Status

All planning/preliminary engineering studies have been completed including San Timoteo Creek. Construction on Seven Oaks Dam is scheduled to begin during the current Fiscal Year 1989/90. The mainstem project is scheduled for completion by the year 2001.

To continue construction of the project in Fiscal Year 1990/91, the Corps of Engineers will require $65,000,000 in federal funding along with cash contributions (approximately $6.3 million), lands and various services totaling $62.6 million from local sponsors.

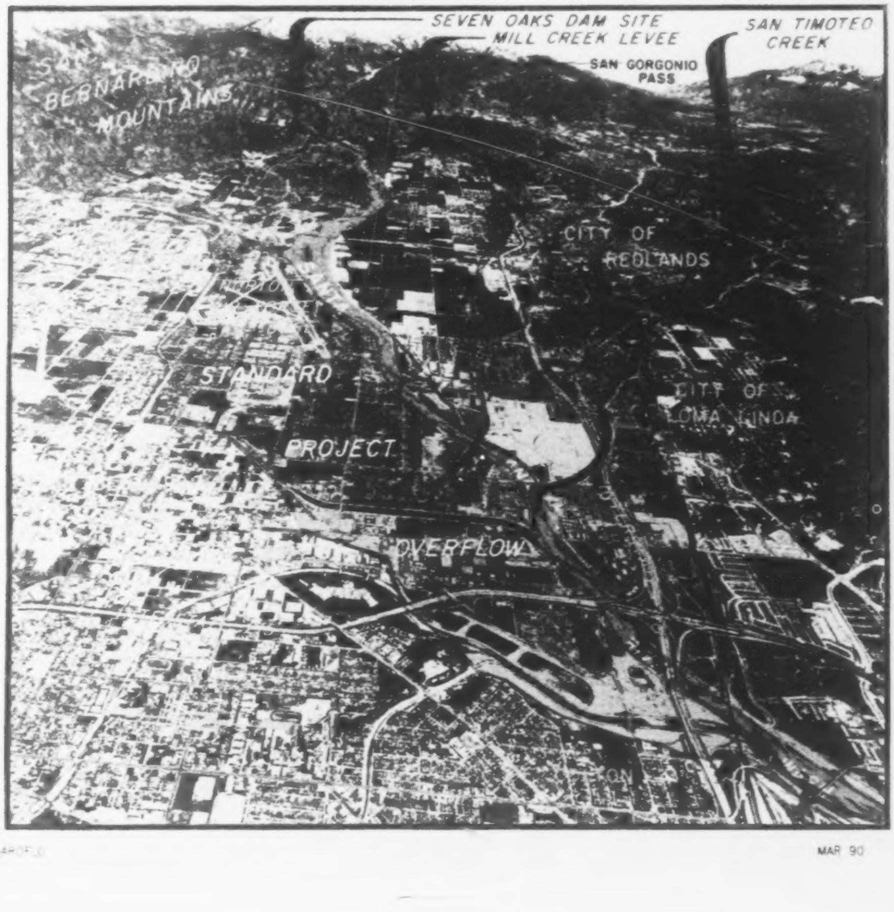
The California Water Commission voted support of this project.

PROJECT AUTHORIZED:	Public Law 94-587, Section 109, Approved October 22, 1976 Public Law 99-662, Water Resources Development Act of 1986
TOTAL PLANNING AND ENGINEERING COST:	$26,100,000
TOTAL PROJECT COST:	$1.3 billion - Includes $440.5 million local share
STATE CALIFORNIA WATER COMMISSION RECOMMENDATION Fiscal Year 1990/91:	$65,000,000
PRESIDENT'S BUDGET Fiscal Year 1990/91:	$65,000,000
ACTION:	Approval of $65,000,000 by Appropriation Committees and Congress

SANTA ANA RIVER MAINSTEM PROJECT

FEATURE	ACTIVITY	REQUIRED FUNDING F.Y. 90/91
SAN BERNARDINO COUNTY:		
SEVEN OAKS DAM	Construction; environmental and cultural resources; engineering and design; project management	$ 11,709,000
MILL CREEK LEVEE	Engineering and design	586,000
SAN TIMOTEO CREEK CHANNEL	Special report to be prepared during this fiscal year	N/A
ADDITIONAL DOWNSTREAM FEATURES:		
LOWER SANTA ANA RIVER (Marshland and channel)	Fish and wildlife facilities; construction; engineering and design	$ 48,294,250
SANTIAGO CREEK	Engineering and design	$ 750,000
OAK STREET DRAIN	Construction; relocation; engineering and design	$ 9,208,250
PRADO DAM	Engineering and design; project management	$ 625,500
S.A.R. MAINSTEM PROJECT	Required Project Funds	$ 71,173,000
	Non-federal contribution (required in addition to LERRD's)	$ - 6,173,000
	FEDERAL CONTRIBUTION	**$ 65,000,000**

REQUIRED F.Y. 90/91 FUNDS FOR SANTA ANA RIVER MAINSTEM $ 65,000,000


SEVEN OAKS DAM SITE
MILL CREEK LEVEE
SAN TIMOTEO CREEK
SAN GORGONIO PASS
SAN BERNARDINO MOUNTAINS
CITY OF REDLANDS
STANDARD PROJECT OVERFLOW
CITY OF LOMA LINDA

DAY CREEK WATER PROJECT

Bureau of Reclamation Project

Project Description

The Day Creek Water Project is a Bureau of Reclamation "Small Project" under PL 84-984. The project provides for construction of the elements depicted in red and listed on the adjoining map.

The Bureau project will provide for a $13.4 million interest free loan to construct a portion of the improvements. The total project is expected to cost nearly $50 million, with the cities of Rancho Cucamonga and Ontario and the County of San Bernardino providing the remaining local interest portion through Mello-Roos Assessment and Redevelopment Agency funding sources.

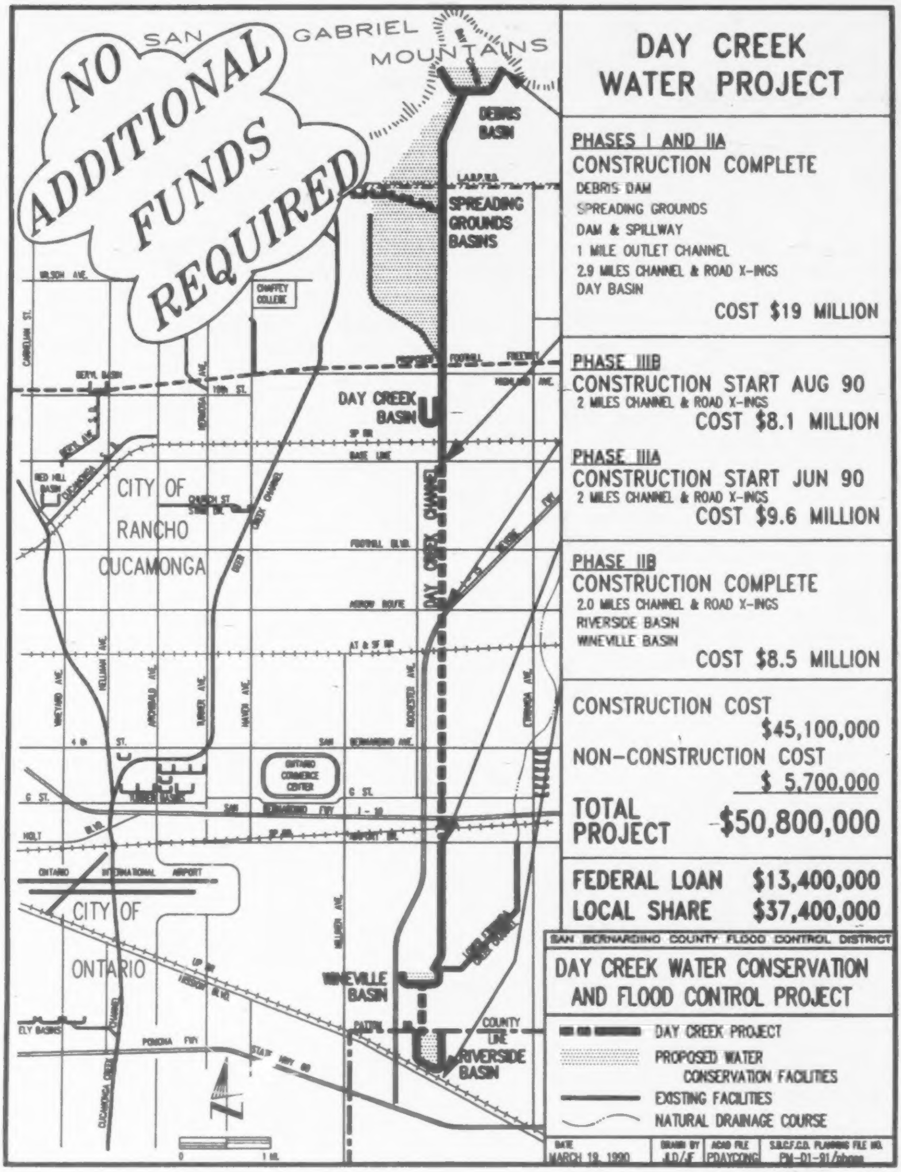
When completed, the water conservation facilities will conserve an estimated 5,000 acre feet of storm run-off per year into the Chino Groundwater Basin to benefit agricultural, municipal and industrial water users in the Valley. As is known, the Basin safe yield is in an over-draft condition, which is replenished by importing water from northern California. This project would help reduce the need for purchasing imported water.

Project Status

FUNDING COMPLETED: We are pleased to announce the federal funding portion of the Day Creek Water Project is now complete. The last payment of the $13.4 million federal loan will be received in March of this year.

The project is now in its third year of construction and approximately $28 million have been spent. Construction will continue until approximately 1991, when it will be completed at an approximate total project cost of $50 million. Without the federal loan to assist in the overall funding program, we would not have been able to stay on our construction schedule, and complete the project in a timely manner.

Our deepest and sincerest thanks to the Committee for their ongoing support and funding approval.


NO ADDITIONAL FUNDS REQUIRED
SAN GABRIEL MOUNTAINS
DEBRIS BASIN
L.A.P.P.&L.
SPREADING GROUNDS BASINS
WILSON AVE.
CARNELIAN ST.
CHAFFEY COLLEGE
BERYL BASIN
19th ST.
HERMOSA AVE.
PROPOSED FOOTHILL FREEWAY
HIGHLAND AVE.
DAY CREEK BASIN
SP RR
BASE LINE
RED HILL BASIN
CUCAMONGA
CITY OF RANCHO CUCAMONGA
CHURCH ST STORM DR.
DEER CREEK CHANNEL
FOOTHILL BLVD.
DAY CREEK CHANNEL
ARROW ROUTE
AT & SF RR
VINEYARD AVE.
HELLMAN AVE.
ARCHIBALD AVE.
TURNER AVE.
HAVEN AVE.
ROCHESTER AVE.
ETIWANDA AVE.
4th ST.
SAN BERNARDINO AVE.
ONTARIO COMMERCE CENTER
TURNER BASINS
G ST.
SAN BERNARDINO FWY I - 10
HOLT BLVD.
SP RR
AIRPORT DR.
ONTARIO INTERNATIONAL AIRPORT
CITY OF ONTARIO
UP RR
MISSION BLVD.
MILLIKEN AVE.
WINEVILLE BASIN
LOWER ETIWANDA CREEK CHANNEL
ELY BASINS
CUCAMONGA CREEK CHANNEL
POMONA FWY
STATE HWY 60
PHILADELPHIA
COUNTY LINE
RIVERSIDE BASIN
0
1 MI.

DAY CREEK WATER PROJECT

PHASES I AND IIA
CONSTRUCTION COMPLETE
- DEBRIS DAM
- SPREADING GROUNDS
- DAM & SPILLWAY
- 1 MILE OUTLET CHANNEL
- 2.9 MILES CHANNEL & ROAD X-INGS
- DAY BASIN

COST $19 MILLION

PHASE IIIB
CONSTRUCTION START AUG 90
- 2 MILES CHANNEL & ROAD X-INGS

COST $8.1 MILLION

PHASE IIIA
CONSTRUCTION START JUN 90
- 2 MILES CHANNEL & ROAD X-INGS

COST $9.6 MILLION

PHASE IIB
CONSTRUCTION COMPLETE
- 2.0 MILES CHANNEL & ROAD X-INGS
- RIVERSIDE BASIN
- WINEVILLE BASIN

COST $8.5 MILLION

CONSTRUCTION COST	$45,100,000
NON-CONSTRUCTION COST	$ 5,700,000
TOTAL PROJECT	**$50,800,000**

FEDERAL LOAN	**$13,400,000**
LOCAL SHARE	**$37,400,000**

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

DAY CREEK WATER CONSERVATION AND FLOOD CONTROL PROJECT

▬ ▬ ▬	DAY CREEK PROJECT
▨	PROPOSED WATER CONSERVATION FACILITIES
▬	EXISTING FACILITIES
∼	NATURAL DRAINAGE COURSE

DATE	DRAWN BY	ACAD FILE	S.B.C.F.C.D. PLANNING FILE NO.
MARCH 19, 1990	JLD/JF	PDAYCONG	PM-01-91/phase

BUREAU OF RECLAMATION

SAN SEVAINE CREEK WATER PROJECT

Project Description

The San Sevaine Creek Water Project is a Bureau of Reclamation "Small Project" under PL 84-984. The project provides for construction of the elements depicted in red and listed on the adjoining map.

The Bureau project will provide for a $29.6 million low interest loan to construct a portion of the improvements. The total project is expected to cost nearly $67 million, with the cities of Rancho Cucamonga and Fontana and the County of San Bernardino providing the remaining local interest portion through Regional Drainage Fees, Mello-Roos Assessment and Redevelopment Agency funding sources.

When completed, the water conservation facilities will conserve an estimated 25,000 acre feet of storm run-off per year into the Chino Groundwater Basin to benefit agricultural, municipal and industrial water users in the Valley. Presently, the Basin safe yield is in an over-draft condition, which is replenished by importing water from northern California. This project would help reduce the need for purchasing imported water.

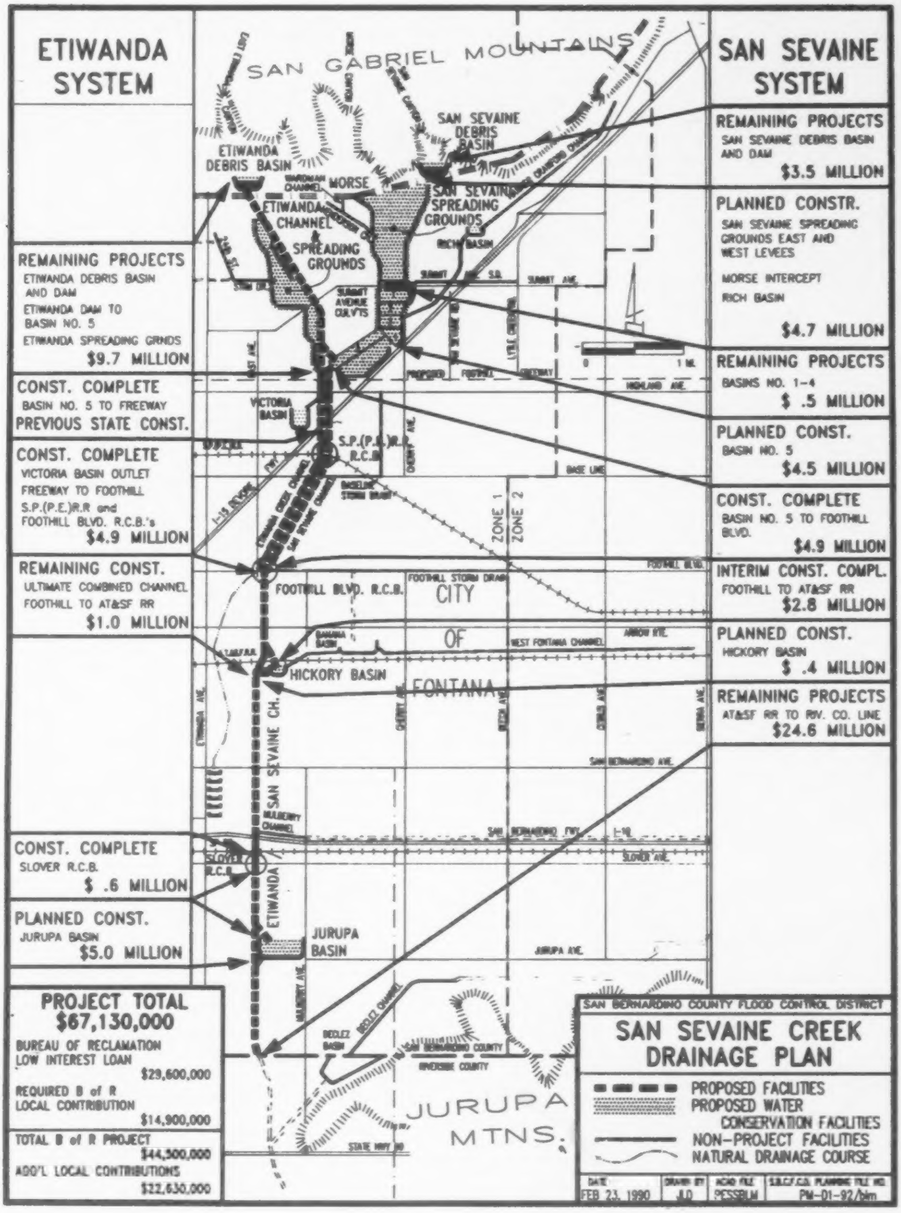
Project Status

The Bureau Loan Application Report has been forwarded to the Secretary of the Interior for approval. All environmental issues have been addressed and related permits are in process. The project status and costs are depicted on the adjoining map.

Upon completion of the project phases currently under construction or funded for construction, all presently available local contribution funds of approximately $15.8 million will have been expended without completion of the project. The $15.8 million already committed exceeds the required Bureau of Reclamation local contribution of $14.9 million. Insertion of $5 million in the 1990/91 federal budget will allow continued construction of the project. Without these funds it will be several years before local interests can accrue sufficient funds to continue this vital project.

On September 1, 1989, and, again on March 2, 1990, the California Water Commission voted support of this project.

PROJECT AUTHORIZED:	Public Law 84-984, as amended 1956
TOTAL PLANNING AND CONSTRUCTION COST:	Approximately $3.5 million
TOTAL PROJECT COST:	Approximately $67 million
TOTAL PROJECT COST UNDER PL 84-984:	Approximately $44.5 million
STATE OF CALIFORNIA WATER COMMISSION RECOMMENDATION Fiscal Year 1990/91:	Support
PRESIDENT'S BUDGET Fiscal Year 1990/91:	-0-
REQUIRED ACTION:	Project Support by Appropriation Committees and Congress


ETIWANDA SYSTEM
REMAINING PROJECTS
ETIWANDA DEBRIS BASIN AND DAM
ETIWANDA DAM TO BASIN NO. 5
ETIWANDA SPREADING GRNDS
$9.7 MILLION
CONST. COMPLETE
BASIN NO. 5 TO FREEWAY
PREVIOUS STATE CONST.
CONST. COMPLETE
VICTORIA BASIN OUTLET
FREEWAY TO FOOTHILL
S.P.(P.E.)R.R and
FOOTHILL BLVD. R.C.B.'s
$4.9 MILLION
REMAINING CONST.
ULTIMATE COMBINED CHANNEL
FOOTHILL TO AT&SF RR
$1.0 MILLION
CONST. COMPLETE
SLOVER R.C.B.
$ .6 MILLION
PLANNED CONST.
JURUPA BASIN
$5.0 MILLION
PROJECT TOTAL
$67,130,000
BUREAU OF RECLAMATION LOW INTEREST LOAN
$29,600,000
REQUIRED B of R LOCAL CONTRIBUTION
$14,900,000
TOTAL B of R PROJECT
$44,500,000
ADD'L LOCAL CONTRIBUTIONS
$22,630,000
SAN SEVAINE SYSTEM
REMAINING PROJECTS
SAN SEVAINE DEBRIS BASIN AND DAM
$3.5 MILLION
PLANNED CONSTR.
SAN SEVAINE SPREADING GROUNDS EAST AND WEST LEVEES
MORSE INTERCEPT
RICH BASIN
$4.7 MILLION
REMAINING PROJECTS
BASINS NO. 1-4
$ .5 MILLION
PLANNED CONST.
BASIN NO. 5
$4.5 MILLION
CONST. COMPLETE
BASIN NO. 5 TO FOOTHILL BLVD.
$4.9 MILLION
INTERIM CONST. COMPL.
FOOTHILL TO AT&SF RR
$2.8 MILLION
PLANNED CONST.
HICKORY BASIN
$ .4 MILLION
REMAINING PROJECTS
AT&SF RR TO RIV. CO. LINE
$24.6 MILLION
SAN GABRIEL MOUNTAINS
ETIWANDA DEBRIS BASIN
SAN SEVAINE DEBRIS BASIN
MORSE
ETIWANDA CHANNEL & SPREADING GROUNDS
SAN SEVAINE SPREADING GROUNDS
RICH BASIN
SUMMIT AVE.
SUMMIT AVENUE CULVTS
HIGHLAND AVE.
VICTORIA BASIN
S.P.(P.E.)R.R. R.C.B.
BASE LINE
I-15 DEVORE FWY
ZONE 1
ZONE 2
FOOTHILL BLVD.
FOOTHILL BLVD. R.C.B.
FOOTHILL STORM DRAIN
CITY OF FONTANA
BANANA BASIN
WEST FONTANA CHANNEL
ARROW RTE.
AT&SF R.R.
HICKORY BASIN
ETIWANDA AVE.
CHERRY AVE.
CITRUS AVE.
SIERRA AVE.
SAN BERNARDINO AVE.
SAN SEVAINE CH.
MULBERRY CHANNEL
SAN BERNARDINO FWY. I-10
SLOVER AVE.
SLOVER R.C.B.
ETIWANDA
JURUPA BASIN
JURUPA AVE.
MULBERRY AVE.
DECLEZ BASIN
DECLEZ CHANNEL
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY
JURUPA MTNS.
STATE HWY 60
0
1 MI.
SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT
SAN SEVAINE CREEK DRAINAGE PLAN
PROPOSED FACILITIES
PROPOSED WATER CONSERVATION FACILITIES
NON-PROJECT FACILITIES
NATURAL DRAINAGE COURSE
DATE: FEB 23, 1990
DRAWN BY: JLD
ACAD FILE: PESSBLM
S.B.C.F.C.D. PLANNING FILE NO. PM-01-92/blm

MINUTES OF THE BOARD OF SUPERVISORS

OF SAN BERNARDINO COUNTY, CALIFORNIA

FEBRUARY 26, 1990

On motion of Supervisor Walker, duly seconded by Supervisor Turoci, and carried, the following resolution is adopted by the Board of Supervisors of the County of San Bernardino, State of California:

RESOLUTION NO. 90-54

WHEREAS, on March 2, 1990, the State Water Commission will adopt final recommendations for Fiscal Year 1990-91 funding for Federal Water and Flood Control Projects; and

WHEREAS, these recommendations will be submitted to the Congressional Appropriations Committee; and

WHEREAS, the Santa Ana River Mainstem project is needed to solve serious flood control problems in San Bernardino County, Riverside and Orange Counties;

NOW, THEREFORE, BE IT RESOLVED that the San Bernardino County Board of Supervisors strongly supports and recommends the following project to the California Water Commission, the United States Senate Committee on Appropriations-Sub-Committee on Energy and Water Development, and the House of Representatives Committee on Appropriations - Sub-Committee on Energy and Water Development.

PROJECT	PRESIDENT'S BUDGET	S.B. COUNTY RECOMMENDATION FEBRUARY 26, 1990
U.S. ARMY CORPS OF ENGINEERS		
SANTA ANA RIVER MAINSTEM - "ALL RIVER PLAN" INCLUDING SEVEN OAKS DAM, MILL CREEK LEVEES, SAN TIMOTEO CHANNEL, AND PRADO DAM AND RESERVOIR	$65,000,000	$65,000,000

PASSED AND ADOPTED by the Board of Supervisors of the County of San Bernardino, State of California, by the following votes:

AYES: SUPERVISORS: Turoci, Mikels, Walker, Riordan

NOES: SUPERVISORS: None

ABSENT: SUPERVISORS: Hammock

* * * * * *

STATE OF CALIFORNIA
COUNTY OF SAN BERNARDINO } ss.

I, EARLENE SPROAT, Clerk of the Board of Supervisors of the County of San Bernardino, State of California, hereby certify the foregoing to be a full, true and correct copy of the record of the action taken by said Board of Supervisors, by vote of the members present, as the same appears in the Official Minutes of said Board at its meeting of 2/26/90 lw #52 Resolution No. 90-54

EARLENE SPROAT
Clerk of the Board

By ______ Deputy

Mr. Hill. Thank you.

Our next speaker is Mayor Sheila Lodge, City of Santa Barbara.

Ms. Lodge. Mr. Chairman, committee Members, although Santa Barbara is current experiencing the driest year of this century, we have had-droughts and floods in the past.

Mission Creek has flooded and left only the city's airport terminal above water, and the airport inoperable. Mission Creek runs through downtown Santa Barbara and floods on average once every three years, causing great loss to businesses and residences.

I respectfully urge your support of the Kern River and Mission Creek projects and thank you for your past support.

[The statement of Sheila Lodge follows:]

CITY OF SANTA BARBARA

SHEILA LODGE
Mayor

CITY HALL
DE LA GUERRA PLAZA
P.O. DRAWER P-P
SANTA BARBARA, CA [illegible]
TELEPHONE (805) [illegible]

April 2, 1990

United States Senate Committee on Appropriations
Sub-Committee on Energy and Water Development
131 Dirksen - Senate Office Building
Washington, D.C. 20510
ATTN: The Honorable J. Bennett Johnston, Chair

SUBJECT: CITY OF SANTA BARBARA MISSION CREEK CHANNELIZATION

Dear Senator Johnston:

The Santa Barbara City Council respectfully requests your support for the $550,000 appropriation proposed by the U.S. Army Corps of Engineers in the Fiscal Year 91 budget for the Santa Barbara Mission Creek Channelization Project. This appropriation will allow for continued development of the General Design Memorandum which is scheduled for completion in Fiscal Year 92 on this very worthwhile and much needed flood control and channelization project in the City of Santa Barbara.

The Corps of Engineers completed the Feasibility Report and Environmental Impact Statement for lower Mission Creek in 1986, which fully documented a severe and chronic flooding problem which can be solved by the channelization of Mission Creek with a project which considers and mitigates sensitive environmental areas.

Mission Creek presently overtops its banks on the average of once every three years, causing damage, disruption and economic loss to the residential and business community of Santa Barbara. Approval of funding for the project design will be a big step towards solving a long standing flooding problem.

Your assistance in voting for this project will be appreciated.

Sincerely,

Sheila Lodge
Mayor

JMO/dw

cc: Congressman Robert J. Lagomarsino
Senator Alan Cranston
Senator Pete Wilson

Mr. HAMMOCK. Thank you very much.

Our next is Mayor Larry Bagley, City of Oceanside.

Mr. BAGLEY. Mr. Chairman, Members of the committee, thank you very much for this opportunity.

You know, we all say thank you when we come up here, almost is pro forma, but a lot of us in this room who are really experienced in our home districts, reflections of what this committee has done; and when we say thank you, we sincerely mean that.

I have submitted testimony relative to the San Luis Rey River, and I would ask that be made part of the record.

In summary, I would simply say that we do support and ask you to support the President's budget of five and a half million dollars, and since there are some modifications needed in the project, we may be exceeding the expenditures authorized back in 1970.

And we would also be asking some modification in the language to reflect that.

Thank you very much.

[The statement of Larry M. Bagley follows:]

CITY OF OCEANSIDE

APRIL 4, 1990

U.S. HOUSE OF REPRESENTATIVES

COMMITTEE ON APPROPRIATIONS

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

The Honorable Tom Bevill, Chairman

Subject: San Luis Rey River Flood Control Project, Oceanside, California

The City of Oceanside is requesting that Congress appropriate $5.5 million, as recommended in the Administration's proposed FY1990 budget for the continuing construction of the San Luis Rey River Flood Control Project. Reach 1 (from the Pacific Ocean to Priory Road) and the environmental mitigation for the project were completed in May, 1989.

The San Luis Rey River Flood Control Project is needed to protect more than 4,000 homes and over 100 businesses in the San Luis Rey valley from the risk of devastating floods. Recent illegal excavations in the channel have further heightened the flood risk for public facilities and properties along the river. Consequently, the need to proceed with construction of the project is even more critical this coming year.

The San Luis Rey River Flood Control project is both economically and environmentally justified. Changes in project conditions have required the Corps of Engineers to re-evaluate certain design features of the project and the phasing of construction. However, the $5.5 million can be expended on a portion of the project not subject to redesign. Ultimately, those modifications will result in a better, economically justified project.

Due to changed conditions in the San Luis Rey River, the revised project may exceed the federal expenditure limit established under Section 201 of P.L. 89-298. Consequently, the City of Oceanside requests that the Subcommittee modify the project to provide that the authorized cost of the project at October, 1989 price levels is $60 million.

The San Luis Rey River Flood Control project enjoys broad public support. Both the City of Oceanside and the U.S. Army Corps of Engineers have worked closely with property owners affected by the project to ensure that the project minimizes private harm while at

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CAMERA

the same time meeting all regulatory and environmental statutes.

The City of Oceanside requests your continued support for this vital project.

Respectfully submitted,

Larry M. Bagley
Mayor

CITY OF OCEANSIDE

APRIL 4, 1990

U.S. HOUSE OF REPRESENTATIVES

COMMITTEE ON APPROPRIATIONS

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

The Honorable Tom Bevill, Chairman

Subject: Experimental Sand Bypass, Oceanside, California

The City of Oceanside is requesting that Congress appropriate $2.7 million in the federal FY91 budget for the operation of the Oceanside sand bypass system. The sand bypass, which was directed by Congress in 1981, will ensure continual replenishment of Oceanside's beach, which has been seriously eroding as a result of the federal construction of the Camp Pendleton harbor during World War II. The bypass will also eliminate the need for frequent, costly maintenance dredging of Oceanside Harbor, which is done at full federal expense.

The initial phase of the sand bypass began operation in June, 1989. The Corps of Engineers has termed the initial operation as an unqualified success, and in fact, the pumps have worked even more efficiently than anticipated. A status report prepared by the Los Angeles District has found that the bypass system is more cost effective than conventional dredging. Upon installation of the fluidizers proposed in Phase II of the project, the cost effectiveness of the sand bypass is expected to be further enhanced.

Congress appropriated $2.6 million in FY90 for operation of the sand bypass and construction of Phase II of the project, installation of the fluidizers. However, the Corps of Engineers has withheld allocation of funds to begin construction of the fluidizers pending approval of the status report on the system by the Office of the Chief of Engineers and verification that funds will be available to operate the system in FY91.

The $2.7 million "capability" for the project in FY91 is proposed to be allocated as follows:

Operations and Maintenance =	$1.0 million
Engineering and Design; Supervision and Administration; Monitoring =	0.7 million
Construction =	1.0 million
Total	$2.7 million

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The City of Oceanside requests that the Subcommittee further direct the Corps of Engineers to proceed with construction of Phase II (the installation of the fluidizers) of the sand bypass with the monies appropriated for that purpose in FY90. The City also requests that the Committee direct the Corps of Engineers to initiate construction on Phase III (the ultimate sand bypass system design) in FY91.

Congress previously has noted that Oceanside suffers severe economic losses due to the harbor shoaling and beach erosion problems. Operation of the sand bypass system, including the fluidizers, is needed immediately to provide continuous maintenance dredging for a vital military installation, Camp Pendleton Harbor, as well as a U. S. Coast Guard port of refuge. The appropriation will also prevent extensive deterioration of the existing installation. A lack of maintenance in FY1991 could make startup of the system at a later date cost prohibitive.

Data from the U. S. Army Corps of Engineers show that the sand bypass is a cost effective alternative to maintenance dredging. The technology developed through the Oceanside sand bypass experiment can lead to a reduction in federal maintenance dredging costs nationwide. The sand bypass will also spur the economic recovery of Oceanside's deteriorated shorefront, and allow a construction moratorium imposed by the Coastal Commission along a one-half mile stretch of coastline to be lifted. The Oceanside sand bypass has universal support from local residents, elected officials and down coast communities. We ask the Subcommmittee's support of an appropriation for this vital project.

Respectfully submitted,

Bagley

Larry M. Bagley
Mayor

Mr. Fazio. Mr. Deutsch is scheduled to come in this afternoon. Are you on track with him at this point?

Mr. Bagley. Strangely enough, Mr. Deutsch and the City of Oceanside are very closely on track. I don't believe he will be here, though. I talked to him on Friday, and he said he probably wouldn't be making it.

If you want me to come over, I will tell you what he wrote in a letter to me.

Mr. Hill. Tim McCullough, Consultant, Merced County Association of Governments.

Mr. McCullough. Good morning. My name is Tim McCullough, and with me today is Jay Anderson. Supervisor Doug Davenport sent us both here in his stead.

He was called back to Merced on business. He wishes to extend his appreciation to the committee for their continued support of the project and in particular, Mr. Fazio, for his support of this project and the many years that he has been involved with it.

We again are here before your committee. The project is—we look for a construction start to begin this year on Castle Dam, which is the first unit of the project.

So we should see flood protection finally for the community of Merced by the end of this year.

Thank you again for your continued support. We request that you look favorably on again placing $1.9 million in the budget for this all important project.

Thank you very much.

[The statement of Mr. Davenport follows:]

UNITED STATES HOUSE OF REPRESENTATIVES
Committee on Appropriations
Subcommittee on Energy and Water Development

April 4, 1990

STATEMENT SUMMARY:

BY....... **Wyatt Davenport, Supervisor, County of Merced, CA**
PROJECT.. **Merced County Streams Project, Flood Control CA**
POSITION. **SUPPORT: President's Budget $1,900,000 FY 90/91**
Corps of Engineers, Construction General

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE:

Greetings from the Board of Supervisors of Merced County, California. It has been said that it is hard to remain committed to a flood project in the middle of a four year drought. But, committed we remain, for history has taught us that flooding will return and that lives and property will be destroyed unless the Merced County Streams Project is completed. Thus we are motivated to remain steadfast in our resolve.

My name is Wyatt Davenport, and I am the Supervisor of District Number One, County of Merced, California. I would like to take just a moment to reflect on past accomplishments, but more importantly to solicit your continued assistance in seeing this all important project completed. For now, this means supporting the President's FY 90/91 budget request of $1,900,000 for constructing the Castle Unit of the Streams Project. Over the long haul it means continuing our march to total project completion, making modifications along the way where conditions warrant, while complying with the economic and environmental realities of our ever changing community.

A year has passed since we have had an opportunity to appear before you and much has transpired in the furtherance of providing flood protection. Negotiations have been completed and agreements signed between the Corps of Engineers, the State of California and the County of Merced. These agreements clearly identify agency roles and responsibilities for cost sharing, land acquisition and future operation and maintenance. The Corps of Engineers assures us that they have finalized design of the Castle Dam Unit and will have that unit under construction by late spring. In preparation for this construction the State and County have funded land acquisitions and the process of land transfer is well underway. However, before dirt can be moved, assurance of federal funding must be realized. The Corps of Engineers has identified, and the President has recommended next years project requirements at $1,900,000. Thus the reason for my journey. We again need the support of this Committee for the inclusion of this amount in the FY 90/91 budget.

The County of Merced together with the State of California are not alone in their support for the project. We are joined in this effort by the City of Merced, the Merced and El Nido Irrigation Districts, and the Le Grand-Athlone Water District.

The Merced County Streams Project is a modification and expansion of an earlier flood project constructed between 1948 and 1957. It has undergone considerable review and modification since first authorized as part of the Flood Control Act of 1970. Approximately $9,000,000 has been spent to-date on planning and design by the Corps of Engineers. This has been matched by local contributions in the approximate amount of $2,600,000. As true partners in financing the construction of this project, we have worked closely with the Corps to establish an economic balance between benefits and costs. As a result of this combined effort, non-essential project components were first scaled back and eventually eliminated. This scaling to fit the economic reality resulted in substantial federal and local savings.

Federal authorization for project construction was granted as part of the Supplemental Appropriations Act of 1985, which limits construction to facilities on Canal (Castle Dam) and Black Rascal Creeks (Haystack Mountain Dam), enlargement of Bear Creek Dam and modification of levies and channels along approximately 33.4 miles of Fahrens, Black Rascal, Cottonwood, and Bear Creeks. When completed the project will provide flood protection worth approximately $8,021,000 per annum to 158,000 acres of urban and agricultural lands. Total project cost is approximately $100,900,000, of which $30,400,000, or roughly 30%, will be paid during construction by the local beneficiaries.

When completed 60,000 residents of metropolitan Merced will live with the assurance of 125 year flood protection, while the lower rural area will receive twenty-five year protection. Castle Air Force Base, a major installation of the Strategic Air Command will also benefit through the establishment of a local storm run-off discharge capability in adjacent streams. Partial protection to the Base is currently provided by diverting Base run-off into the canal system of the Merced Irrigation District. This practice has not only caused past damage, but has added to the threat of flooding to adjacent communities.

Agricultural productivity within the project area is devoted to orchards, vines, and row crops. This represents some of the finest irrigated agricultural land of California's San Joaquin Valley. Agricultural units are predominately single family, and our farmers pride themselves on being self reliant. Less than 2% of the project area is devoted to growing subsidized crops. Water storage and irrigation works were planned, constructed, and managed operated without federal assistance.

Together we have completed the arduous task of project planning. It is now time for us to take the next step, that of construction. In order for this to happen, your support is needed.

Earlier this year the California Water Commission voted to recommend supporting a federal FY 90/91 budget request in the amount of $1,900,000 for the Merced County Streams Project. This coincides with the amount requested by the President. We ask that you again show your support by requesting that $1,900,000 be placed in the U.S. Army Corps of Engineers Fiscal 90/91 projects budget for continuing construction of the Merced County Streams Project.

Thank you,

Mr. HILL. Thank you very much, Tim.

Our next speaker is Mr. Larry Libeu, Director of Administrative Services, Eastern Municipal Water District.

Mr. LIBEU. Thank you, Mr. Chairman.

My name is Larry Libeu, and I am the Director of the Administrative Services for the Eastern Municipal Water District.

I appreciate this opportunity to submit a request for funding under the provision of the P.L. 84-984 Loan Program, Department of Interior, Bureau of Reclamation.

Eastern's project will provide new and exciting concept in water management, which will result in significant water conservation.

Like many others, the district is faced with its fourth year of drought conditions, and we are rapidly depleting our ground water supplies.

This project will put in place a main transmission system and the pertinent works necessary for a secondary Class II water system which one, will reduce the demands on our depleted ground water supply and provide for essential recharge.

It will give us the ability to sustain a vital agricultural production and economy and provide environmental enhancement creating wetlands.

We respectfully request your support of a write-in appropriation in the fiscal year 1991 budget. Our complete testimony has been submitted for the record, and we thank you very much.

[The information follows:]

Eastern Municipal Water District

General Manager
J. Andrew Schlange

gal Counsel
Redwine and Sherrill

Director of The Metropolitan Water District of Southern California
Doyle F. Boen

Treasurer
Rogers M. Coe

Board of Directors
Richard C. Kelley, President
Rodger D. Siems, Vice President
Wm. G. Aldridge
John M. Condurso
Chester C. Gilbert

Secretary
Juanita L. Machek

March 20, 1990

United States House of Representatives
Committee on Appropriations
Subcommittee on Energy and Water Development
Honorable Tom Bevell, Chairman

Attention: Mr. Bob Schmidt, Staff Assistant

PROJECT SUMMARY

Mr. Chairman, my name is Andrew Schlange, General Manager of the Eastern Municipal Water District. I appreciate the opportunity to submit Eastern's request for funding of a construction project under the provisions of the Small Reclamation Projects Act of 1956 as amended P.L. 84-984 Loan Program, with the United States Department of the Interior, Bureau of Reclamation.

EASTERN MUNICIPAL WATER DISTRICT RECLAIMED WATER SYSTEM PROJECT

Eastern Municipal Water District is the local sponsor of the Bureau of Reclamation Project. This project will provide for a new concept in water management which will result in significant water conservation. The Eastern Municipal Water District, is faced with the fourth year of subnormal (drought) conditions which are rapidly depleting the District's groundwater supplies.
The project will put in place the Main Transmission system and appurtenant works necessary for a secondary water supply system, which will 1) reduce the demands on the District groundwater supply; 2) provide for extended agricultural production; and 3) provide environmental enhancement creating wetlands for the migratory birds of the Pacific Flyway.

The Fiscal Year 1990 Budget does not include funding for this project as part of the BUREC Programs. We respectfully request a write-in appropriation of $2,000,000 in the 1990-91 Fiscal Year Budget.

A summary is enclosed.

D17/31
LL:mg

Mail To: Post Office Box 8300 • San Jacinto, California 92383-1300 • Telephone (714) 925-7676 • Fax (714) 929-0257
Main Office: 2045 S. San Jacinto Street, San Jacinto • Customer Service/Engineering Annex: 440 E. Oakland Avenue, Hemet, CA

Eastern Municipal Water District

General Manager
J. Andrew Schlange

gal Counsel
Redwine and Sherrill

Director of The Metropolitan Water District of Southern California
Doyle F. Boen

Treasurer
Rogers M. Cox

Board of Directors
Richard C. Kelley, President
Rodger D. Siems, Vice President
Wm. G. Aldridge
John M. Coudures
Chester C. Gilbert

Secretary
Juanita L. Machok

March 20, 1990

United States House of Representatives
Committee on Appropriations
Subcommittee on Energy and Water Development
Honorable Tom Bevill, Chairman

Attention: Mr. Bob Schmidt, Staff Assistant

The Eastern Municipal Water District (District) is applying for a loan under the United States Bureau of Reclamation (USBR), Small Projects Loan Program P.L. 84-984, entitled "Water Reclamation Facilities". The project work is expected to cover a period of three (3) years, with a cost of approximately $46,600,000. Financial participation will be in accord with the Loan Guidelines.

The Project is extremely important to the implementation of a new and innovative concept in water management and therefore, will result in significant water conservation for the District. Unfortunately, the Project is not funded in the President's Budget for Fiscal Year 1991.

The District will request its Congressional Delegation to make a special request for a new write-in appropriation for Fiscal Year 1991 budget year in the amount of $ 2,000,000 to begin this most critical work, that will:

1. provide for the restoration of one of the District's most precious commodities, namely, high quality groundwater;
2. extend the life of a very vital element of our economy, agriculture; and
3. provide for environmental enhancement.

During the California Water Commission Hearings on March 2, 1990, Water Commission did approve support of this Project for recommendation to the Congressional Delegation on behalf of the District.

I plan to be in Washington D.C. March 28 through April 4, 1990, when your Committee will be holding hearings on the Appropriation Bill, and I respectfully request the opportunity to appear before your Committee in support of this very critical water management project. I am enclosing a summary of the Project, which I will describe briefly as part of my testimony at the Hearing.

Mail To: Post Office Box 8300 • San Jacinto, California 92383-1300 • Telephone (714) 925-7676 • Fax (714) 929-0257
Main Office: 2045 S. San Jacinto Street, San Jacinto • Customer Service/Engineering Annex: 440 E. Oakland Avenue, Hemet, CA

We, at the District, sincerely appreciate your assistance in scheduling the opportunity to appear before your Committee to testify on behalf of the District Project and as part of the California Water Commission presentation.

Respectfully,

J. Andrew Schlange
General Manager

LL:mg
D17/38

PROJECT SUMMARY

The Eastern Municipal Water District is seeking Federal financing under the Small Reclamation Projects Act of 1956 to enlarge, rehabilitate and improve its water reclamation facilities. The water reclamation facilities will serve as a Class 2 water distribution system to provide irrigation water and improved water service for approximately 20,000 acres of irrigated land. Due to the continued drought conditions, which are now in the fourth year, the Metropolitan Water District of Southern California (MWD), Southern California's major water supply importer, has actually placed restrictions on the use of Colorado River water and State import water for agricultural purposes due to the increased demand for domestic supplies. The major impact of this restriction precludes the sale of water for agricultural uses to new areas not currently within MWD.

The proposed water reclamation system will provide an alternate water supply system for, presently, water-short agricultural lands. The enlargement of the water reclamation facilities would decrease the use within the District of our limited imported domestic water supplies and would permit continuous irrigation with provisions to expand irrigation capabilities to lands which are presently being dry farmed.

The basic effect of the proposed project on the environment would be preservation and expansion of irrigated agriculture, thereby assisting in the improvement of the economy of the cities of San Jacinto, Hemet, Sun City, Perris, and Moreno Valley, plus surrounding areas.

Another major purpose of the project is the establishment of wetland areas throughout Eastern Municipal Water District. During the winter months, the agricultural demand decreases significantly, providing a surplus of reclaimed water. This surplus can be used to expand and enhance the wetland areas throughout the San Jacinto River Basin and serve migratory birds using the Pacific Flyway during the winter months.

Additionally, the proposed project will convey untreated potable water and reclaimed water to groundwater recharge basins to enhance the replenishment of the underlying groundwater basin. Groundwater supplies decrease as demands increase.

This groundwater will serve both domestic and irrigation water to various users within the District. With the conveyance of untreated potable water and reclaimed water to groundwater recharge basins, use of groundwater supplies, our most precious resource, can be further preserved for both future domestic and agricultural uses.

PROJECT DESCRIPTION

The proposed project will be interfaced with existing reclaimed water facilities, owned and operated by the District. The existing facilities consist of five regional water reclamation facilities, 38.5 miles of reclaimed water pipelines and two in-line booster stations. The existing facilities presently are capable of supplying reclaimed water to 8340 acres of irrigated land.

The proposed project will consist of the following facilities:

1. Construction of approximately 40.0 miles of new cement mortar lined and coated steel pipeline ranging in pipe size from 24" to 54" in diameter;

2. Construction of four (4) pumping plants;

3. Creation and construction of approximately 200 acres of wetland enhancement areas;

4. Construction of a 7 MGD tertiary treatment expansion at the Hemet/San Jacinto Regional Water Reclamation Facility.

A map showing the location of the existing loan project and ultimate facilities to serve the area is enclosed. The total cost of the project is estimated at $46,600,000 with the District contributing a percentage of the project costs.

PROJECT BENEFITS

The beneficial uses of the project consist of four (4) major areas:

1. Irrigated agriculture;
2. Wetlands enhancement;

3. Municipal and industrial water supply (M&I);
4. Groundwater recharge and replenishment.

The primary benefit of the proposed project will be to irrigated agriculture. Upon the construction of the proposed project, the reclaimed water system would be able to provide reclaimed water to approximately 20,000 acres of irrigable land. The system will provide reclaimed water to agricultural lands within a mile either side of the proposed conveyance pipeline alignment initially. An additional 5000 acres of irrigable land which are presently being farmed, will be served by the year 2005 as the volume of wastewater generated increases providing more reclaimed water supplies.

Another major benefit of the proposed system will be the enhancement and enlargement of the wetlands. Two separate wetlands expansions are proposed, each covering approximately 100 acres. One wetland expansion will be proposed in the general vicinity of the California Fish and Game, San Jacinto Wildlife Refuge. The other wetland expansion is near Winchester Road in French Valley, east of Temecula, California. The exact location of the sites will be dependent upon the land acquisition process. The wetlands areas will also function as groundwater recharge basins. The water conveyed to these areas will percolate into the underlying groundwater to replenish these supplies.

The proposed project will provide water supply for municipal and industrial (M&I) purposes. Along the proposed reclaimed water pipeline alignment, numerous golf courses, parks and greenbelts are proposed for construction within the next five years. The availability of reclaimed water will allow these facilities to be irrigated with reclaimed water supplies, thereby preserving treated potable water that would have been used without the proposed system.

Finally, the proposed project will provide a groundwater recharge/replenishment benefit by conveying untreated potable water to a 100 acre recharge basin within an area of District known as the Little Valley near Bautista Canyon, east of Hemet, California. The recharge of this basin will enhance the declining groundwater supplies of the neighboring communities of Hemet and San Jacinto, California. -

LL:mg
D17/46

LOAN PROGRAM
FISCAL YEAR 1991

Proposed New Start
Appropriation: Loans

Project:
Eastern Municipal Water District's Reclaimed Water Project for Groundwater Recharge and Wetlands Enhancement

Location and Brief Description:

The Project is located in southwestern Riverside County from North of the San Diego County line to the City of Riverside and easterly to the San Jacinto Mountains. The proposed project will construct a reclaimed water distribution system; with the pumping plants, reservoirs, percolation basins, and 155,000 feet of pipeline providing groundwater discharge and wetland enhancement.

Financial and Program Information:

Total Estimated Cost: $46,600,000; 2,000,000 (1991), 8,100,000 (1992), $11,000,000, (1993), 10,000,000 (1994).

FTE Required By 1991: No new employees
Authorization: P.L. 84-984 as amended
Direct B/C Ration: N/A
Congressional District: CA-35, 36, 37, 39 & 43
Public Support: No opposition known
Expect Cost Sharing: $15,500,000 contribution
Repayment: Yes
Feasibility Report Approved: DLAR scheduled for submittal April 1990
Final Preconstruction Report: N/A
Environmental Impact Statement: Draft EA scheduled for submittal April 1990
Land Certification Date: April 1990
Endangered Species Act: Compliance through EA
Department SOD Ranking: N/A

Program Goals:

Full Service	92,400 AC
M&I Water	28,400 AF/YR
Hydroelectric Power	NO
Recreational Features	YES
Fish & Wildlife Features	YES
Salinity Control	N/A

Justification:

The proposed project will also improve irrigation to agricultural lands and provide groundwater recharge for the San Jacinto River Basin. The proposed project will allow for improvements to the underlying groundwater basin without endangering its future use.

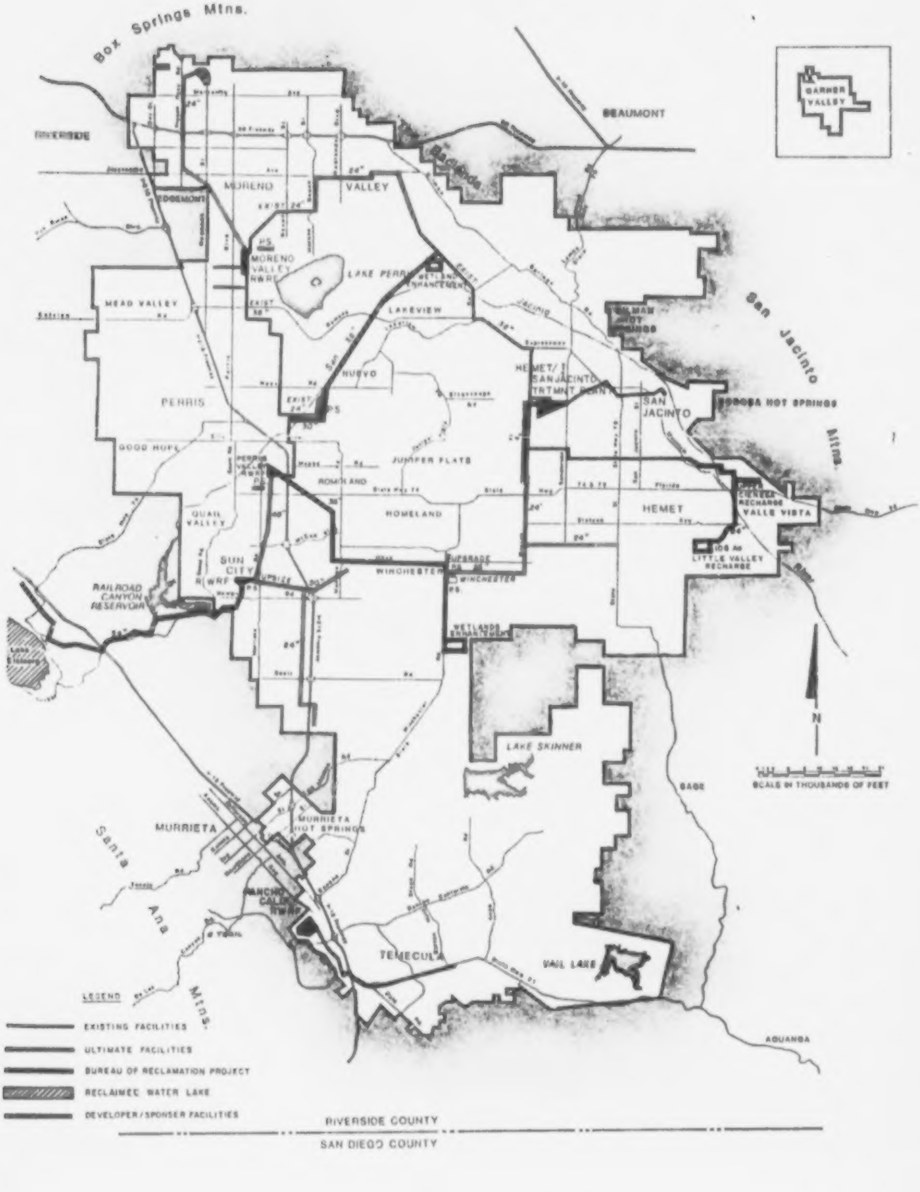
The proposed project will enhance and expand wetland areas throughout the Eastern Municipal Water District. The wetlands enhancement along the San Jacinto River will serve birds migrating through the Pacific Flyway during the winter months.

LL:mg
D17/22

EASTERN MUNICIPAL WATER DISTRICT

RIVERSIDE COUNTY, CALIFORNIA

RECLAIMED WATER FACILITIES


Box Springs Mtns.
RIVERSIDE
EDGEMONT
MORENO
VALLEY
EXIST 24"
24"
PS
MORENO VALLEY RWRF
LAKE PERRIS
WETLAND ENHANCEMENT
EXIST 36"
LAKEVIEW
MEAD VALLEY
NUEVO
EXIST 24"
PS
PERRIS
GOOD HOPE
PERRIS VALLEY RWRF
ROMOLAND
JUNIPER FLATS
HOMELAND
QUAIL VALLEY
SUN CITY RWRF
UPSIZE
PS
RAILROAD CANYON RESERVOIR
Lake Elsinore
WINCHESTER
UPGRADE PS
WINCHESTER PS
WETLANDS ENHANCEMENT
BEAUMONT
GARNER VALLEY
San Jacinto Mtns.
GILMAN HOT SPRINGS
HEMET/SAN JACINTO TRTMNT PLANT
SAN JACINTO
SOBOBA HOT SPRINGS
CIENEGA RECHARGE
VALLE VISTA
HEMET
24"
100 Ac LITTLE VALLEY RECHARGE
N
SCALE IN THOUSANDS OF FEET
LAKE SKINNER
SAGE
MURRIETA
MURRIETA HOT SPRINGS
Santa Ana Mtns.
RANCHO CALIF. RWRF
TEMECULA
VAIL LAKE
AGUANGA
LEGEND
EXISTING FACILITIES
ULTIMATE FACILITIES
BUREAU OF RECLAMATION PROJECT
RECLAIMED WATER LAKE
DEVELOPER/SPONSER FACILITIES
RIVERSIDE COUNTY
SAN DIEGO COUNTY

Mr. HILL. Thank you.

Mr. Chairman, the rest of our people who are all here have agreed to file a statement in the interest of time, and we appreciate it very much.

I do think you set that clock ahead a little bit, but anyway, thank you.

[The information follows:]

UNITED STATES HOUSE OF REPRESENTATIVES
COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE OF ENERGY AND WATER DEVELOPMENT

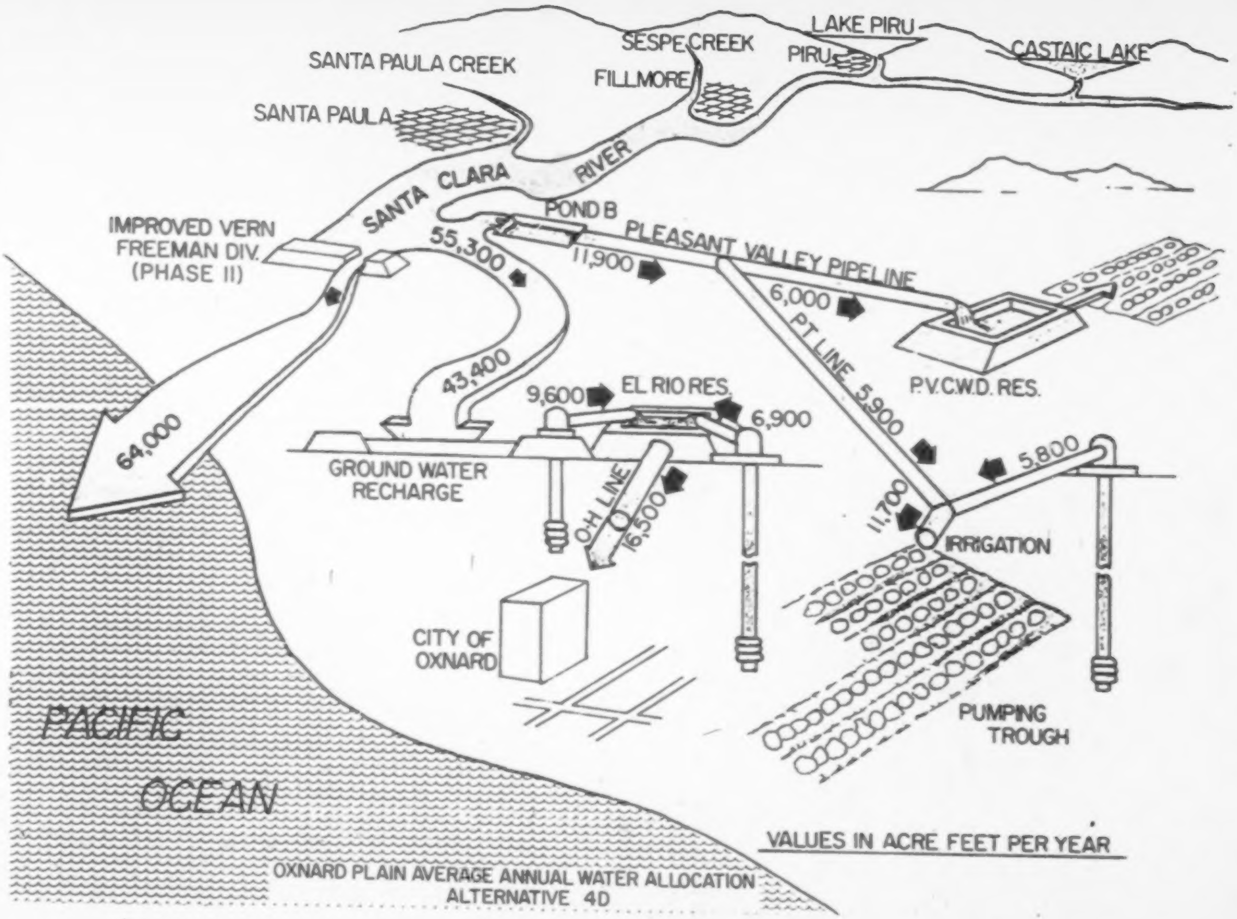
Good Morning. My name is Lynn E. Maulhardt, President of the United Water Conservation District Board of Directors from Ventura County California

United Water Conservation District (see map on next page) manages the surface and groundwater resources within a 214,000 acre-area in central Ventura County. The area is experiencing a multi-year drought and water rationing among the growers and cities has been imposed recently to help reduce the heavy overdrafting on our aquifers. As a result of previous federal assistance, United has been able to continue construction of the Freeman Diversion Improvement Project which will increase our yield from the Santa Clara River by over 25%.

This statement is not in support of specific funding for the upcoming fiscal year but rather, is an expression of thank you for your past support for the Freeman Diversion Improvement Project which is currently under construction. United has received approximately $18,700,000 of Federal funds under the Small Reclamation Projects Act and we are pleased to inform you that progress has been good and we expect to complete the project in early 1991.

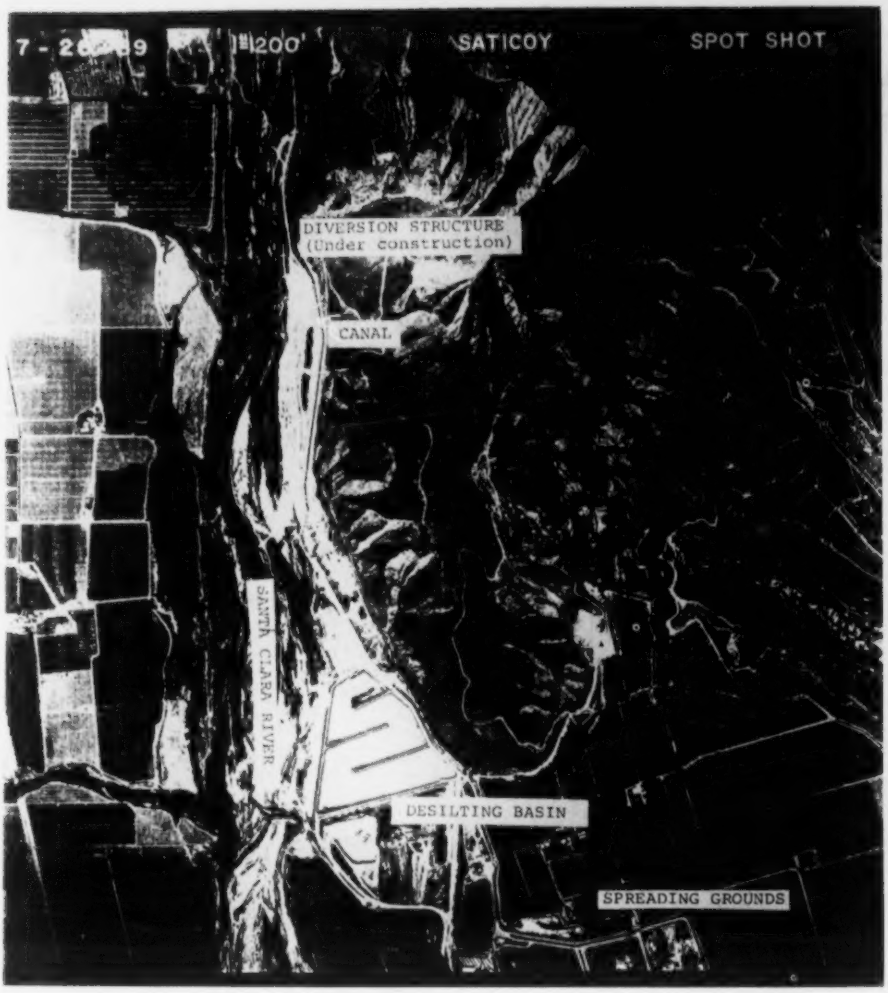
Because of mandated project changes since the loan application was taken out in the early 1980'S, costs have escalated and we are preparing a cost escalation report for the Bureau of Reclamation for which we request your future support.

On the 3rd page, I have enclosed a recent photo illustrating progress in construction of this project and for which we are indebted to the Federal Government and its staff from the Bureau of Reclamation for their professional, effective support. Thank you.


SANTA PAULA CREEK
SESPE CREEK
LAKE PIRU
PIRU
CASTAIC LAKE
FILLMORE
SANTA PAULA
SANTA CLARA RIVER
POND B
PLEASANT VALLEY PIPELINE
IMPROVED VERN FREEMAN DIV. (PHASE II)
55,300
11,900
6,000
PT LINE 5,900
P.V.C.W.D. RES.
43,400
9,600
EL RIO RES.
6,900
64,000
GROUND WATER RECHARGE
O-H LINE
16,500
5,800
11,700
IRRIGATION
CITY OF OXNARD
PUMPING TROUGH
PACIFIC OCEAN

VALUES IN ACRE FEET PER YEAR

OXNARD PLAIN AVERAGE ANNUAL WATER ALLOCATION
ALTERNATIVE 4D


1"=200'
SATICOY
SPOT SHOT
DIVERSION STRUCTURE
(Under construction)
CANAL
SANTA CLARA RIVER
DESILTING BASIN
SPREADING GROUNDS

House Appropriations Committee
Subcommittee on Energy and Water Development
The Honorable Tom Bevill, Chairman

Senate Appropriations Committee
Subcommittee on Energy and Water Development
The Honorable J. Bennett Johnston, Chairman

Amendment to the Testimony of Supervisor John Flynn, Ventura County

The Ventura County Board of Supervisors also thanks your Subcommittee for past aid in beach erosion and control projects in Ventura County. The County supports full funding to honor the commitment of the United States for the Biennial Dredge Project at the County's Channel Islands Harbor. This project is a coastal sand by-pass project of the United States Army Corps of Engineers. The Administration's FY91 budget request for Channel Islands Harbor dredging and maintenance is $3,421,000. We request that this amount be appropriated for FY91.

Temescal Valley Project

ELSINORE VALLEY MUNICIPAL WATER DISTRICT

About EVMWD

Created in 1950, Elsinore Valley Municipal Water District is in its fortieth year of service. The District covers a 125 square mile area, stretching from California Oaks in the south, to Horsethief Canyon in the north. EVMWD also serves the City of Lake Elsinore, Canyon Lake, and Wildomar. In 1989, the District purchased the Temescal Water Company, which is operated as a separate division. The Temescal division serves water for irrigation and domestic customers. Today, the District has approximately 17,500 water, wastewater, and agricultural services combined.

Location: *Lake Elsinore, California*

Congressional District: *37th*

Project Purpose

The Temescal Valley Project would make available to the Temescal Valley an additional source of water. This source of water is made available from the Woodcrest Project, a water project partially funded by the Bureau of Reclamation under authority of the Small Reclamation Projects Act. The Temescal Valley recently has come under the responsibility of EVMWD for water service. Presently, approximately 14,500 acre-feet of water is required for irrigation of 6,000 acres of citrus orchards.

Project Facilities

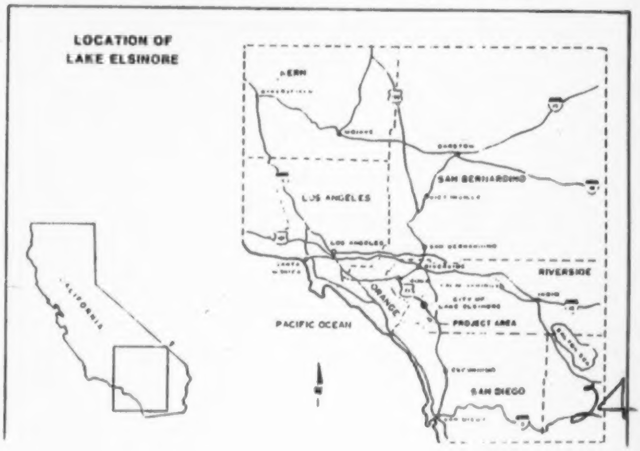
Pipelines, water storage reservoirs, pumpstations.

Cost

Federal:	*$31,100,000*
Local:	*$15,500,000*
Total Project Cost:	*$46,600,000*

Federal Funding Authority

Small Reclamation Projects Act, U.S. Bureau of Reclamation

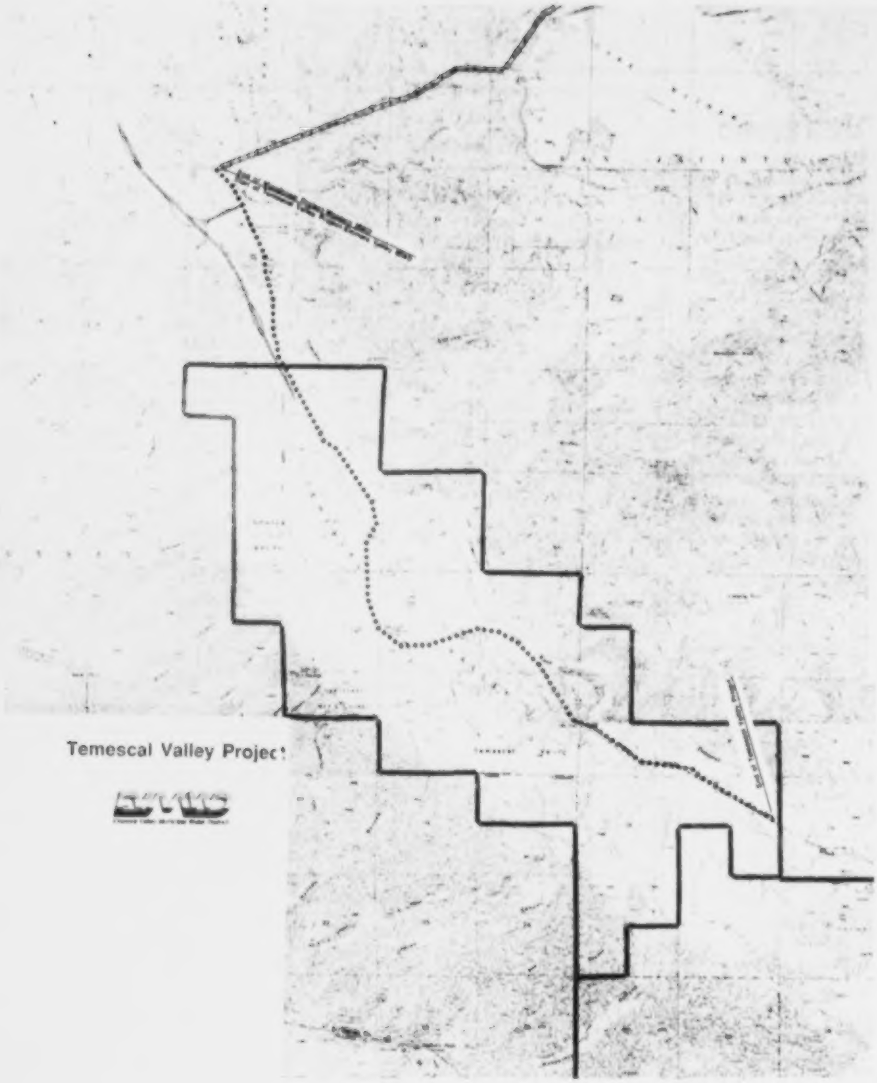


24

EVMWD

lsinore Valley Municipal Water District

33751 Mission Trail
P.O. Box 3000
Lake Elsinore, CA 92330



Temescal Valley Project

MONTEREY COUNTY

FLOOD CONTROL AND WATER CONSERVATION DISTRICT

855 E. LAUREL DRIVE (BLDG. G)
SALINAS, CA 93905
(408) 755-4860
TELEFAX (408) 424-7935

1850

WILLIAM F. HURST
GENERAL MANAGER

MAILING ADDRESS
P.O. BOX 930
SALINAS, CA 93902

March 30, 1990

The Honorable Tom Bevill
Chairman
Subcommittee on Energy and Water Development
Committee on Appropriations
United States House of Representatives
Washington, DC 20001

Subject: Salinas Valley Water Resource Management Plan

Dear Congressman Bevill:

The Monterey County Flood Control and Water Conservation District respectfully requests your committee to approve for Fiscal Year 1990-91, $180,000 for cost shared funding for the general investigation study through the US Bureau of Reclamation to develop the Salinas Valley Water Resource Management Plan. The Study will be conducted in a three-year period at a total cost of $1,000,000 to be shared in equal amounts by the Bureau of Reclamation and the District.

The Salinas Valley Groundwater Basin, located on the Central Coast of California, contains 640,000 acres of fertile farm land that is currently threatened by overdraft causing seawater intrusion and declining groundwater tables. In addition, there is a nitrate contamination problem and a continuously increasing demand for water supply for agricultural, municipal, and industrial uses. The rapidly increasing and competing demands for the existing limited supply and usable quality water has created an urgent need to develop a long range Salinas Valley Groundwater Basin Management Plan. This Basin Management Plan will provide guidance for management options in preserving and providing water supply in an equitable manner for beneficial uses to both agricultural and the growing municipal and industrial uses.

As a result of the agricultural and urban development along the Monterey Bay coast, thousands of acres of wetlands have been lost. There is strong pressure to restore wetlands that once existed at the mouth of the Salinas River and adjacent areas. Within the study area there is a competing need for water by the

US Fish and Wildlife Service for refuges, the Salinas River Lagoon, the Elkhorn Slough National Bird Sanctuary, and the Ventana Wilderness Area. These wildlife areas provide habitat for 27 threatened and endangered species.

The Salinas Valley is nearly 100% dependent on groundwater supply to meet the demands of all agricultural, municipal, and industrial needs. Intensively irrigated agricultural operations are the mainstay of the local economy. The Salinas Valley Groundwater Basin is also the sole provider of water to the US Army Installation located at Fort Ord, with a base population of about 23,000. Recently Fort Ord abandoned their groundwater wells near the coast due to seawater intrusion and drilled new wells inland adjacent to intensively irrigated agricultural lands. The farm economy in the Salinas Valley is not in a condition to bear the total cost of the investigation study to develop the sorely needed Basin Management Plan.

Your assistance in providing the District the resources to stop the seawater intrusion and to preserve the Salinas Valley Groundwater Basin will allow for the beneficial use of our precious water supply for future generations. The goal of this study is to promote controlled, long-term growth and economic prosperity of Monterey County and all of its citizens.

Sincerely,

William F. Hurst

William F. Hurst
General Manager

MAZ/tc

United States House of Representatives
Committee on Appropriations
Subcommittee on Energy and Water Development
Honorable Tom Bevill, Chairman

PROJECT TITLE: Salinas Valley Water Resources Management Study

OBJECTIVES: The objectives of the study are to:

1. Develop a long-range "Water Resource Management Plan" for the Salinas Valley Water Basin.
2. Develop an acceptable restoration program for thousands of acres of wetlands that once existed at the mouth of the Salinas River and adjacent areas.
3. Develop and analyze potential structural and non-structural alternatives for water supply and quality in the Salinas Valley Water Basin.
4. Optimize the beneficial use of existing and potential ground and surface water resources in the Salinas Valley Water Basin.

PROPOSAL: The Monterey County Flood Control and Water Conservation District (District) is seeking cost sharing Federal funding from the US Bureau of Reclamation for a three year planning study. Funding is requested under the Bureau's General Investigation Program designation for a new start project. The project will result in a detailed Water Resource Management Plan for the Salinas Valley area to conjunctively manage surface and groundwater, and solve water quality and water supply problems.

SUMMARY: The Salinas Valley in the County of Monterey California is totally dependent on groundwater supplies to meet the demands of agriculture, municipal, and industrial users. With the increase of agricultural, municipal, and industrial users, the Salinas Valley Water Basin is experiencing additional pressure on an already overdrafted basin causing water levels to become lower and seawater to continue intruding into the confined coastal aquifers. With more water demand than current supply, the District must ensure water quality and quantity for all the users in the Salinas Valley. To meet this broad objective, the District requires the following:

1. The development of a data base and computer analysis capability and a computerized groundwater model for the entire Salinas Valley Water Basin to analyze various water use scenarios for all users.
2. The development and analysis of potential structural and non-structural alternatives for addressing water supply and quality issues.
3. A Salinas Valley Water Basin Management Plan for the long term use of water for the Salinas Valley.

BACKGROUND AND PROBLEM: The Salinas Valley is a highly productive agricultural area of national importance. The valley provides a great percentage of domestically produced table crops and raw eaten vegetables. The area is facing increased competition between water uses for what is an increasingly scarce resource.

The Salinas Valley is nearly 100% dependent on groundwater supplies to meet the demands of all agricultural, municipal, and industrial users. Agricultural water requirements represent about 90% of the Salinas Valley Water Basin demands.

The Basin also provides the water supply for the municipal and industrial needs of several small cities in the Salinas Valley with a combined population of about 200,000. In addition the Basin provides water needs for the Federal installation at Fort Ord with a base population of about 23,000. Recently, Fort Ord abandoned their water wells near the coast due to seawater intrusion and drilled new wells inland at locations where there already exists intense irrigation pumping. The percentage of municipal and industrial demands continues to increase, placing additional pressure on an already overdrafted Basin.

Water quantity issues are further complicated by problems related to water quality. Groundwater protection has become increasingly important. Overdraft is resulting in declining water levels in the unconfined portions of the Basin, and is causing seawater intrusion in the coastal aquifers. Nitrate contamination is also occurring at a rapid rate throughout the Salinas Basin, further serving to constrain the management options available for providing municipal and domestic supplies. Given the relative scarcity of the water resources, there is increasing competition between all beneficial uses.

The purpose of the work is to clarify the local water resource issues and define long-term water management goals and objectives. This work will include definition of structural and non-structural alternatives for addressing the long-term water resource issues. The goal is to promote the long-term growth and economic prosperity of Monterey County and all of its citizens.

THREE YEAR DEVELOPMENT PLAN:

YEAR I: Plan Development

1. Identify issues, refine and prioritize problem statements, and analyze constraints. Constraints can best be defined in two broad categories; technical and social. Technical water resources constraints regard issues of quality, quantity, timing, and location. Social issues involve economic, legal, organizational, and political constraints. Effective management alternatives and goals should be developed based on technical and social constraints.

2. Develop data base and computer analysis capability. The utility of the existing District data and computer data

base will be evaluated. The computational and analytical capability and tools available to the District will be assessed and specific analytical computer models will be developed, or existing models improved.

YEAR II: Alternatives Analysis

Generate structural and non-structural alternative solutions and define a range of methods for managing the available water supplies of usable quality.

Methods for achieving optimum use of existing supplies shall be investigated. Some of the alternatives to restoring the groundwater and hydrologic balance include:

Wetland restoration programs
Conjunctive use programs
Wastewater reclamation
Conservation programs
Water importation through the San Felipe Project
Reservoir construction
Water banking
Artificial recharge programs

These alternatives will be analyzed and compared using the technical and social constraints and issues developed in Year I.

YEAR III: Feasibility Study

Preparation of the final Salinas Valley Water Basin Management Plan.

Detailed engineering and economic feasibility analysis and determination of project benefit cost ratios. Investigation and development of financing methods.

Preparation of Draft Environmental Documents and response to public comments. Selection of preferred alternative. Adoption of final plan for implementation.

FUNDING ESTIMATES:

SOURCE	FY 89-90	FY 90-91	FY 91-92	AGENCY TOTALS
USBR	$180,000	$160,000	$160,000	$500,000
DISTRICT	$180,000	$160,000	$160,000	$500,000
FY TOTAL	$360,000	$320,000	$320,000	
PROJECT TOTAL				$1,000,000

Local cost sharing will be provided by the District and will consist of direct and "in kind" funding.

SACRAMENTO VALLEY
WESTSIDE CANAL ASSOCIATION
34274 State Highway 16
Woodland, California 95695

March 29, 1990

UNITED STATES HOUSE OF REPRESENTATIVES
COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

Gentlemen:

It is of paramount importance that the U.S. Bureau of Reclamation (Bureau) proceed to contract the remainder of the water yield from the Federal Central Valley Project, and thereby fulfill the intent of Congress when it authorized construction of the Tehama-Colusa Canal. Only then will the economic return on the investment in these facilities be fully realized.

Matters of environmental significance must be resolved so that the Bureau can move forward to complete its mission to contract the remaining water supply. In this regard, the Sacramento Valley Westside Association (Association) supports appropriations for FY 1990-91, as shown in the President's Budget for the Bureau's programs, including its Sacramento River Division, Trinity River Restoration, and Delta Support Studies. Also, the Association supports fully, the recommendation of the California Water Commission that Congress appropriate funds for FY 1990-91 for the Bureau to implement its program for a Temperature Control Device at Shasta Dam.

In closing, the Association respectfully requests the support of your Committee for the above-mentioned programs of the Bureau, which are critical to the utilization and management of the water resources of the Sacramento River System.

Respectfully submitted,

Twyla J. Thompson

Twyla J. Thompson, President

**Santa Ana River
Flood Protection Agency**

801-C No. Broadway, Room 105
Santa Ana, California

Mailing Address:
P.O. Box 4048
Santa Ana, CA 92702-4048
Telephone: 714-834-5142

UNITED STATES HOUSE OF REPRESENTATIVES
COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
HONORABLE TOM BEVILL, CHAIRMAN
APRIL 4, 1990

I am George Osborne, Executive Director of the Santa Ana River Flood Protection Agency, supporting a $65,000,000 appropriation to continue construction of the Santa Ana River Mainstem Project.

This Agency was formed in 1974 by a joint powers agreement after the Corps of Engineers revealed that its Prado Dam on the Santa Ana River does not have capacity to protect Orange County from a 100-year or even lesser floods. The Agency members include 21 Orange County cities, the Orange County Flood Control District, the Orange County Water District, the Orange County Sanitation Districts and the County of Orange. More than two million people are represented.

Prado Dam was completed in 1941 and was designed to protect Orange County from the then Project Flood of the Corps of Engineers. The Corps' reevaluation of the project, using rainfall data and procedures not available for the original design, predicts an uncontrolled spillway flow of 50,000 cubic feet per second (cfs) from a 100-year flood and 150,000 cfs from the new Standard Project Flood. Either of these uncontrolled flows would overwhelm downstream channel capacities and inundate thousands of homes which have been located on the historic Santa Ana River floodplain and built there in the belief that Prado Dam would contain Project Flood with a controlled release of only 9,200 cfs. The enormity of the problem is best measured by the Corps of Engineers' estimate of $12 billion property damage and the Orange County Grand Jury's prediction of a loss of 3,000 lives from the Standard Project Flood.

In January 1862, an extremely large storm system flooded wide areas of the southwest and in the Santa Ana River produced a flow estimated from old records at 300,000 cfs, a figure comparable with the Corps of Engineers' Standard Project Flood. It is recorded that in what is now Orange County, the Santa Ana River overflow produced a continuous sheet of water from the hills of Fullerton to the ocean, a distance of approximately 20 miles. A recurrence of this magnitude of flood prior to the completion of the Santa Ana River Mainstem Project would rank as one of America's largest natural catastrophes commanding country-wide headlines.

The Santa Ana River Mainstem Project should be constructed as soon as is humanly possible. The plan was formulated by and between the Corps of Engineers and San Bernardino, Riverside and Orange County Flood Control

Districts over the 10-year period of the seventies and was authorized by Congress in 1986. The first appropriation to begin construction is being expended in the current 1989-90 year and $65 million is needed for 1990-91. The project enjoys the full support of three counties involved who have contracted (in 1989) to share the cost, furnish lands and easements and assume maintenance and liability obligations for the project.

Your Subcommittee's favorable action in reporting out the full $65 million for the Santa Ana River Mainstem Project, a truly urgently needed and meritorious endeavor, is most respectfully requested.

HGO:le(0032314412524)

COURT HOUSE

Santa Barbara County Flood Control
and Water Conservation District

123 E. Anapamu Street
Santa Barbara,
California 93101
(805) 568-3440
Telecopier: (805) 568-3434

PHILLIP M. DEMERY
Director

RUDOLF OHLEMUTZ, D. Eng.
Assistant Director

March 21, 1990

United States House of Representatives
Committee on Appropriations
Subcommittee on Energy and Water Development

Dear Committee Members:

Request

The Santa Barbara County Flood Control and Water Conservation District as local sponsor respectively requests a $300,000 appropriation in FY 1990-91 to initiate the Corps of Engineers Preconstruction, Engineering and Design (PED) for the Carneros Creek Project located in the Goleta vicinity of Santa Barbara County, California. The PED would require 21 months to complete at a total cost of $950,000.

Executive Summary

The Carneros Creek Plan consists of a debris basin and detention basin that would provide flood protection to the Santa Barbara Airport as well as commercial and industrial areas that house high-technology, research and development and data processing firms. In addition, the project will reduce the flooding of and enhance water quality conditions in the Goleta Slough.

The Carneros Creek Plan was a part of a previously authorized (1970) project in the Goleta Valley of Santa Barbara County. However, the previously authorized project was neither publicly accepted nor economically justified. The results of a re-evaluation study recommended a focused Carneros Creek Plan as an economical solution for providing standard project flood protection.

Because of the significant difference in scope between the authorized plan and the recommended Carneros Creek Plan, new authorization is required. Authorization of the Carneros Creek Project via the Water Resources Development Act of 1990 would allow for construction to begin subsequent to the completion of Preconstruction, Engineering and Design. The total project cost, including PED, is estimated to be $5.8 million.

The Carneros Creek Plan is a result of over 20 years of public involvement and coordination. This project is both needed and supported by the community. As local sponsors, the District requests appropriations in FY 1990-91 to initiate the PED effort. Thank you for your consideration of our request.

Sincerely,

Phillip M. Demery

Phillip M. Demery
Flood Control Director

cc: Congressman Robert Lagomarsino
Colonel Charles Thomas, COE - Los Angeles District

Statement of
Robert F. Beach, General Manager
Sonoma County Water Agency

presented to

U. S. HOUSE OF REPRESENTATIVES
COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
HONORABLE TOM BEVILL, CHAIRMAN

in support of appropriation for

DRY CREEK (WARM SPRINGS DAM) PROJECT

April 4, 1990

Mr. Chairman and Members of the Subcommittee -- I am Robert F. Beach, General Manager of the Sonoma County Water Agency (State of California). We urge that the Subcommittee include the sum of $3.5 million in the proposed budget for the Dry Creek (Warm Springs Dam) project in Sonoma County, California.

For the past twenty-nine years we have annually represented to you our support for the Warm Springs Dam project. We have recounted floods and droughts and described the benefits that would flow from the completion of this project. Those benefits are now a reality. However, certain elements of the project remain to be completed.

In 1959, at the time Coyote Valley Dam was constructed, it was believed that the higher Russian River streamflows that would result from the project would mitigate the loss of steelhead spawning and rearing areas which were cut off by the dam. As a result, no fish hatchery or other mitigating facilities were included in the project. It soon became evident that because of high water temperatures and other reasons, the anticipated benefits would not be realized.

For many years the lack of mitigation for the steelhead loss has been a matter of concern to the California Department of Fish and Game, conservation groups, and others. In 1974, Public Law 93-251 was enacted which authorized and directed the Corps of

Engineers to compensate for these fish losses in the Russian River as part of the Warm Springs Dam Project, through measures such as expansion of the Don Clausen Fish Hatchery at Warm Springs Dam. The hatchery was subsequently constructed with space to accommodate additional incubators and associated equipment for the mitigation project.

In 1983, a study was authorized to define the required steelhead mitigation. The Corps of Engineers determined that the annual production of 4,000 adult steelhead trout was necessary. The Corps also determined that the most appropriate method would be an expansion of the Don Clausen Fish Hatchery at Warm Springs Dam and the construction of new trapping, egg-taking, and imprinting facilities. The Sacramento District has prepared the design memorandum, environmental assessment, and other documentation and the plans and specifications have been completed. Construction of the fish hatchery expansion is scheduled to be completed in FY 1991. The Sonoma County Water Agency has agreed to repay the local share of the project costs under the existing water supply contract for the Dry Creek (Warm Springs Dam) project. The proposed budget includes $1.06 million to complete the funding for these and associated fish hatchery facilities.

Certain other work also remains to be completed. This work consists of the grouting of the control tower, emergency spillway slide stabilization, dam access road paving, modification of the control tower air vents and recreation area sanitation facilities.

We, therefore, request that the Subcommittee support this final request of $3,500,000 included in the President's FY 1990 budget for this project. We appreciate the support the Dry Creek (Warm Springs Dam) project has received from this Subcommittee over the years.

STATEMENT BY THE CITY OF STOCKTON, CALIFORNIA
BEFORE THE
COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
OF THE
UNITED STATES HOUSE OF REPRESENTATIVES
THE HONORABLE TOM BEVILL, CHAIRMAN

APRIL 1990

WASHINGTON, D.C.

FLOOD CONTROL AND RECLAMATION APPROPRIATIONS
FISCAL YEAR 1990-91

City of Stockton, California

Mr. Chairman and Members of the Committee:

The City of Stockton supports the Corps of Engineers and Bureau of Reclamation surveys, flood control and reclamation projects in the following amounts:

1.	Calaveras River	$325,000
2.	Mokelumne River and Tributaries	300,000
3.	Sacramento-San Joaquin Delta Investigation	350,000
4.	SAN JOAQUIN RIVER MAINSTREAM AND TRIBUTARIES	500,000
5.	AMERICAN AND SACRAMENTO RIVER INVESTIGATION	2,000,000
6.	AUBURN-FOLSOM SOUTH	1,800,000
7.	DELTA WATER MANAGEMENT	250,000
8.	AMERICAN RIVER FOLSOM SOUTH OPTIMIZATION STUDY	150,000
9.	SAN JOAQIN RIVER RESOURCES MANAGEMENT INITIATIVE	200,000
10.	CALAVERAS/STANISLAUS RIVERS OPERATION AND MAINTENANCE STUDY	300,000

FLOOD CONTROL -- CORPS OF ENGINEERS

CALAVERAS RIVER $325,000

Due to the heavy rainfall in 1986, it was apparent that flood control protection for the Stockton Metropolitan area needs to be strengthened. Flow data available showed that runoff below New Hogan Reservoir caused near flood conditions in 1986. The City endorses the President's Budget and the California Water Commission's recommendation for additional work to investigate storage facilities below New Hogan Dam.

MOKELUMNE RIVER AND TRIBUTARIES **$300,000**

The primary focus of the study is to address flood problems and water supply problems as well as fish and wildlife enhancement possibilities in the area. The City of Stockton supports this project because of its potential beneficial effects for our water basin.

SACRAMENTO-SAN JOAQUIN DELTA INVESTIGATION **$350,000**

This important investigation is being conducted jointly with the California Department of Water Resources. The study will examine alternatives to improve flood control, water supply, and environmental concerns such as riparian vegetation and water quality in the Delta. This study is of paramount importance in regard to current and future California water needs.

SAN JOAQUIN RIVER MAINSTREAM AND TRIBUTARIES **$500,000**

The City is concerned that this important new study is not funded under the President's Budget proposal. This study would address the difficult sedimentation problems experienced along the San Joaquin River flood system, which contributes significantly to flooding and other problems.

AMERICAN AND SACRAMENTO RIVERS - SACRAMENTO **$2,000,000**

The City of Stockton supports the Corps of Engineers and cooperating local agencies in their combined efforts to eliminate the serious flood threat to the metropolitan Sacramento area. The studies need to provide for development of a much needed water supply from the American River. Any dam that is considered for the American River should be multipurpose. It would be wasteful to construct a flood control only dam when there is such an urgent need for water in San Joaquin County and elsewhere in our State. Stockton should have priority for any new water developed from the project, as it has requested American River water from the Bureau of Reclamation in the past and in turn has been denied other sources under the assumption that American River water would be available.

BUREAU OF RECLAMATION

AUBURN-FOLSOM SOUTH UNIT **$1,800,000**

In the President's proposed budget, this project is funded only for maintenance of lands acquired for the Auburn Dam and for miscellaneous personnel support. The City of Stockton is concerned that the project is not addressing the water needs of this area as originally intended. The Bureau should be directed to consider the extension of the Folsom South Canal and the provision for water supply for San Joaquin County. We also recommend that the study include the evaluation of various sized multipurpose projects at the Auburn site. To this end, the City requests that the budget be increased from $1,500,000 to $1,800,000 to support these additional investigations.

DELTA WATER MANAGEMENT PROGRAM **$250,000**

This critically important program was not included in the President's budget for 1991. Bureau involvement is needed to support and participate with the Department of Water Resources in its various investigations. The program supports engineering and environmental investigations of the north, west, and south Delta. The emphasis is on water quality, water levels, flood control, and environmental benefits. The City urges that $250,000 be included in the budget in order to continue this program.

AMERICAN RIVER/FOLSOM SOUTH OPTIMIZATION STUDY **$ 150,000**

This new study could provide an opportunity to gain additional water for the City's watershed. The study will evaluate plans for concurrent surface and groundwater use from existing storage developments and tributary streams to meet Folsom South Area water needs and provide suitable instream flows for fishery and recreation purposes in the lower American River. The President's 1991 Budget only provides $50,000 for this study of this magnitude. The City of Stockton requests an increase of $100,000 for a total budget amount of $150,000.

SAN JOAQUIN RIVER RESOURCES MANAGEMENT INITIATIVE **$200,000**

This new study will look at the potential for integrated operation of the San Joaquin and Tulare Lake basin reservoirs, conjunctive use of surface and groundwater, and the rehabilitation of existing conveyance facilities as a means of providing water for fishery restoration and other environmental improvements. City of Stockton supports the President's budget of $200,000 for this study.

CALAVERAS/STANISLAUS RIVERS **$300,000**

The Bureau has been conducting a study with the California Department of Water Resources of the Calaveras and Stanislaus Rivers. The study is examining conjunctive uses and will result in the development of a water use plan to assist in meeting the water needs of the Calaveras and Stanislaus River Basins. In the past, the Federal share of the study has been funded out of the Bureau's Operations and Maintenance budget. However, increased competition for these funds has placed continuation of this important study in jeopardy. City of Stockton requests that a specific line item be placed in the Bureau's O&M Budget in the amount of $300,000 for this study. This study can contribute to an increase in water available to the Eastern portion of our County and at the same time provide a solution to the degraded San Joaquin River.

311-100-000

Resolution No. 90-0193

STOCKTON CITY COUNCIL

WHEREAS, on April 4, 1990, appropriate committees of the Congress of the United States will conduct hearings to consider Federal Appropriations for flood control, reclamation, and navigational projects for fiscal year 1990-91; and

WHEREAS, several projects to be considered at said Congressional hearings will directly impact the City of Stockton and its environs; and

WHEREAS, the expeditious construction of said projects is required to protect the health, welfare and safety of the residents of this area; now, therefore,

BE IT RESOLVED BY THE COUNCIL OF THE CITY OF STOCKTON AS FOLLOWS:

1. That the City of Stockton does hereby support the appropriation by the Congress of the United States of funds for fiscal year 1990-91 for the planning, continuation and completion of flood control and reclamation projects as specifically set out in that certain document entitled "Statement by the City of Stockton, California Before the Committee on Appropriations Subcommittee on Energy and Water Development of the United States Senate, Flood Control and Reclamation Appropriations Fiscal Year 1990-91" (Statement), a copy of which is attached hereto as Exhibit A.

2. That said Statement is hereby approved as the official Statement of the City Council.

CITY ATTY
REVIEW
DATE MAR 1 9 1990

3. That the City Manager is directed to forward a copy of said Statement to the appropriate Congressional Committees and to the City of Stockton's representatives in the Senate and House of Representatives.

PASSED, APPROVED and ADOPTED this 26th day of MARCH, 1990.

/s/ JOAN DARRAH

JOAN DARRAH, Mayor
of the City of Stockton

ATTEST:

/s/ FRANCES HONG

FRANCES HONG, City Clerk
of the City of Stockton

Ayes:	Councilmembers McCarthy, McGaughey, Minnick, Rust, Vice Mayor Weaver and Mayor Darrah
Noes:	None
Absent:	Councilmember Panizza

I, FRANCES HONG, do hereby certify as follows:

I am the duly appointed, acting and qualified City Clerk of the City of Stockton, a California municipal corporation; as such City Clerk, I am the custodian of the official records of the City Council of said City; the attached Resolution is a full, true and correct copy of Resolution No. 90-0193 of said City Council, which was adopted by the City Council, on MARCH 26, 1990

IN WITNESS WHEREOF, I have hereto affixed my hand and the seal of the City of Stockton this 27th day of MARCH, 1990

FRANCES HONG
City Clerk of the City of Stockton

By Shirley Ortega Deputy

CITY OF NEWPORT BEACH
PUBLIC WORKS DEPARTMENT
P.O. BOX 1768, NEWPORT BEACH, CA 92659-1768
(714) 644-3311

March 29, 1990

Honorable Tom Bevill, Chairman
Subcommittee on Energy and Water Development
Committee on Appropriations
2362 Rayburn Hourse Office Building
Washington D.C. 20515

Subject: State of the City of Newport Beach before the Committee on Appropriations April 4, 1990

Dear Mr. Chairman and Members of the Committee,

The City of Newport Beach is in support of the President's Fiscal Year 1991 budget. In particular, the City urges your support for funding of the Santa Ana River Mainstem Project which enters the Pacific Ocean adjacent to the City. The City strongly supports the earliest possible construction start for the project and implementation of the associated marsh restoration work at the mouth of the river.

The City also supports a Corps project, the Coast of California Storm and Tidal Waves Study, which is not shown for funding in the President's proposed Fiscal Year 1991 budget. The study will provide valuable coastal information and coordination which will enable a more rational management and design of coastal facilities and sand nourishment programs by Federal, State and Local agencies. The City, in conjunction with CMANC, and other local agencies in Los Angeles and Orange Counties request that an additional $400,000 be budgeted to provide for the federal share of funds necessary to expand the study to the Los Angeles - Orange County region. It is understood that the study would be funded under a 50/50 cost sharing program by the Corps of Engineers and local agencies.

Thank you,

John Wolter

John Wolter
Cooperative Projects Engineer

JW:so

3300 Newport Boulevard, Newport Beach

RANCHO PALOS VERDES

Before

House, Committee on Appropriations,
Subcommittee on Energy and Water Development
The Honorable Tom Bevill, Chairman

Testimony of City of Rancho Palos Verdes
Landslide Committee
April 4, 1990
John McTaggart, Mayor Pro Tem

Mr. Chairman:

I thank the Committee for previous investigation appropriations. You have made it possible for the Secretary to conduct a coastline Reconnaissance Study at Portuguese Bend in the City of Rancho Palos Verdes, California.

Tidal action makes this project necessary. The City must depend on the Corps to begin a Feasibility Study of this worthy public works project.

Mr. Chairman, this landslide poses a serious threat to the public interest, several hundred acres of marine environment, and considerable public property. The City Council deeply appreciates the support of this committee to solve the problem.

Mr. Fazio. Clair, that is a stellar performance. To give C–MANC the opportunity to get out on time is really appreciated, I am sure, by your California water colleagues.

I just want to say personally that the entire state owes a great debt of gratitude to you for all the work you have done for so many years, and the way in which you bring the California delegation and present its testimony is just outstanding.

I really believe the Commission has done a tremendous job during your membership of looking at the priorities, and making some tough decisions. You simply are not a rubber stamp. You are helping this committee make decisions about priorities, and we appreciate that very much.

Mr. Hill. Thank you very much. Sometimes we are not very popular in parts of California, but we try to do our job.

Mr. Fazio. That is what leadership is all about. We all discover that.

Mr. Bevill. Thanks to all of you for a very fine presentation.

Wednesday, April 4, 1990.

CALIFORNIA MARINE AFFAIRS AND NAVIGATION CONFERENCE

WITNESSES

ROBERT H. LANGNER, PRESIDENT

RICHARD PARSONS, CHAIRMAN OF BOARD AND GENERAL MANAGER, VENTURA PORT DISTRICT

MAYOR GEORGE LIVINGSTON, CITY OF RICHMOND

MICHAEL POWERS, PORT OF RICHMOND

LARRY MALLON, PORT OF RICHMOND

MAYOR DAVE KARP, CITY OF SAN LEANDRO

MAYOR SHEILA LODGE, CITY OF SANTA BARBARA

MAYOR LARRY BAGLEY, CITY OF OCEANSIDE

JIM MANUES, DIRECTOR AND CHIEF EXECUTIVE OFFICER, OCEANSIDE HARBOR DISTRICT

MAYOR PRO TEM JOHN McTAGGART, CITY OF RANCHO PALOS VERDES

DAN ALLEN, CHIEF HARBOR ENGINEER, PORT OF LONG BEACH

VERN HALL, CHIEF HARBOR ENGINEER, PORT OF LOS ANGELES

GERALD L. POPE, PORT OF OAKLAND

NOLAN R. GIMPEL, CHIEF EXECUTIVE OFFICER, PORT OF OAKLAND

JOHN GLUBBER, DIRECTOR OF C-MANC FOR PORT OF OAKLAND

ALEXANDER KRYGSMAN, PORT OF STOCKTON, (FORMER CHAIRMAN OF C-MANC)

OSCAR KLEINFELD, COMMISSIONER, PORT OF STOCKTON

PHILLIP WALLACE, COMMISSIONER, PORT OF STOCKTON

JOHN SULPIZIO, DIRECTOR, PORT OF SACRAMENTO

JAMES BLECHA, PORT OF SAN LUIS

CAROLYN MOFFATT, CHAIRMAN, PORT COMMISSION

BRIAN FOSS, DIRECTOR, SANTA CRUZ HARBOR

ERIC BOURDON, DEPARTMENT OF BEACHES AND HARBORS, LOS ANGELES COUNTY

FRANK BOERGER, VICE CHAIRMAN ELECT OF C-MANC AND GOLDEN GATE PORTS ASSOCIATION

JACK ALDERSON, COMMISSIONER, HUMBOLDT BAY HARBOR DISTRICT

BOB DAVENPORT, COMMISSIONER, HUMBOLDT BAY HARBOR DISTRICT
DENNNIS HUNTER, COMMISSIONER HUMBOLDT BAY HARBOR DISTRICT
DAVE BERNARDI, CITY OF SAN RAFAEL
JACK CASTLE, COMMISSIONER, PORT OF REDWOOD CITY
DICK DODGE, COMMISSIONER, PORT OF REDWOOD CITY
FLOYD SHELTON, COMMISSIONER, PORT OF REDWOOD CITY
WALTER SMALL, COMMISSIONER, PORT OF REDWOOD CITY
GUY SMITH, COMMISSIONER, PORT OF REDWOOD CITY
JEAN FLOCKS, SAN MATEO COUNTY HARBOR DISTRICT
ROD LUNDIN, DANIEL, MANN, JOHNSON & MENDENHALL
CHUCK RENDALL, DANIEL, MANN, JOHNSON & MENDENHALL
JERRY SEELMAN, DANIEL, MANN, JOHNSON & MENDENHALL
EDWARD MILLAN, OXNARD HARBOR DISTRICT
BOB H. JENNINGS, HARBOR COMMISSIONER, OXNARD HARBOR DISTRICT
CARL NELSON, THE KEITH COMPANIES
DONALD WEBB, CITY OF NEWPORT BEACH
JOHN WOLTER, CITY OF NEWPORT BEACH
BOB WRIGHT, CALIFORNIA MARINE PARKS AND HARBOR ASSOCIATION
CHARLEY ABBOTT, CHARLES ABBOTT ASSOCIATES
VERONICA SANCHEZ, PORT OF SAN FRANCISCO

Mr. FAZIO. And now we will, as we have for so many years in the past, go to Bob Langner, the President of the Marine Affairs.

Mr. LAGNER. Thank you, Mr. Fazio, Chairman, Members of the committee.

It's indeed a pleasure to be back here on my 32nd annual appearance before this committee, and if there is any record to be set in the future, we would like to hear about it.

But unchanged is the purpose and role served by this almost one-third of a century of testimony. Our purpose is to bring to you our recommendations for funding of California Navigation and related projects and to present witnesses and others from the state in support of these requests.

We have a unanimously approved list of recommendations before you, which includes supporting the President's budget proposals for the coming fiscal year.

And as we have always done, some certain requests for increases, one of which, however, at the last minute, first time in our history, has been corrected, and that is a reduction of $400,000 for the proposed expanded study of the Coast of California, the southern region.

I believe that Carl Blum of LA County, the Public Works Deputy Director, has already testified and included in his testimony is fact. We have a number of other comments to make about the conditions and so forth. We always do, but first let us present our witnesses in support of specific projects.

Led by our Chairman of the Board of C-MANC, Richard Parsons, General Manager of the Ventura Port District.

[The statement of Robert H. Langner follows:]

CALIFORNIA
ORGANIZED 1956
C-MANC
Marine Affairs and Navigation Conference
303 WORLD TRADE CENTER • SAN FRANCISCO, CALIFORNIA 94111 • TELEPHONE (415) 982-7788 • FAX (415) 982-7268

April 4, 1990

PRESENTED TO: Subcomittee on Energy and Water Development
Committee on Appropriations
2nd Session, One-Hundreth and First Congress

STATEMENT OF: Robert H. Langner, President
California Marine Affairs and Navigation Conference

Mr. Chairman and Members:

It is a particular pleasure - for obvious reasons - to be able to be before you today and to state that this is my 32nd annual appearance. Should some record be established within the next year or so as the result of this consistency and endurance, let's hope that this will be reported to C-MANC.

Unchanged is the purpose and role served by this almost one-third century of testimony: Our purpose is to bring to you in as brief and effective a manner as possible our recommendations for funding of California navigation and related projects, and to present witnesses and others here from the Golden State in support of these requests.

Once again C-MANC has united to study and unanimously approve the schedule appended to this written statement supporting the President's budget proposals for the coming fiscal year, and as we have always done, in certain instances recommending increases.

Specifically, our recommendations include proposals for an additional $47.5 million covering 68 California projects, of which $26.1 million would provide funds in addition to those recommended by the President, for operations and maintenance of existing projects.

Those supporting these projects and who have initiated requests - in some instances for funds additional to those contained in the President's budget - will present their rationales and reasons as part of C-MANC's scheduled testimony today.

OFFICERS AND DIRECTORS

RICHARD PARSONS Chairman of the Board
Ventura Port District

ROBERT H LANGNER President
Marine Exchange of the S F Bay Region

JOHN CHRISTIAN Vice Chairman
Port of Sacramento

DAN ALLEN Treasurer
Port of Long Beach

FRANK BOERGER
Consultant
MICHAEL CHENEY
Consultant
WAYNE CLARK
Wayne Clark Public Relations
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GORDON FULTON
Concept Marine
VERN HALL
Port of Los Angeles

PAUL HUGHEY
Colab
KENNETH JOHNSON
California Marine Parks & Harbors Assn
ConnMass
ALEXANDER KRYGSMAN
Port of Stockton
ROD LUNDIN
Daniel Mann Johnson & Mendenhall
JIM MANUES
Oceanside Small Craft Harbor District
ED MILLAN
Oxnard Harbor District
ROBERT NICHOL
Moffat and Nichol
GERALD POPE
Port of Oakland
TED REED
Los Angeles County

We are aware of the seemingly insurmountable budgeting and deficit problems with which you and the Administration must chronically contend, we are realistic. Funds have been more limited, discretionary cuts made, demands increase. We do however persist in our conviction that public works in general, and navigation and related projects in particular, afford our economy and well-being cost-effective benefits. The track record is beyond dispute. We seek only reasonable consideration, in the context of the traditional Federal role and historic commitment - however bent in recent years and decisions.

Opinions and advice vary and confuse - and the supplicants grow in numbers in the wings. But sooner or later, economies must result from the historic changes taking place in our defense and alliance commitments. A near-half century of funding will undergo changes in applications. We add our hopes for appropriate sharing - in the national interest - for projects such as we represent.

It must come as no surprise to you that C-MANC continues with its many expressed concerns - only some of which are addressed in your Committee's mandate. However, your sympathetic, understanding of these complaints and laments - and little attention given elsewhere in the Federal establishment - tempt us to again present our views.

In reviewing the Army's and Corps' testimony before the Appropriations and Public Works Committees, the emphasis on cost-sharing and user fees is noted; the principle is properly described and project sponsors and beneficiaries - public and industry - have accepted the concept, increases projected, and are cooperating. Problems were anticipated in putting the programs into effect - and were realized and contended with.

Another major emphasis - not new, certainly, but with fresh enthusiasm - are environmental concerns. Here, consensus is much less certain. Project sponsors and facility users - large and small - face increasing problems, rising costs, greater delays, more confusion - than ever before. Both at the Federal level, and increasingly with state and local initiatives and responses, demands on and proposals to those responsible for our ports and harbors, marinas and waterways sometimes appear Orwellian in nature and Kafkaesque in application.

We find no longer certain an advocacy avenue within the system. Rather, it is all the more evident that the inherent importance and value of waterborne commerce and navigation, the fisheries and water-related recreation must be constantly re-proven, demonstrated - pleaded for. The burden of proof seems by expediency and political convenience shifted almost entirely to us.

Perhaps these views are skewed by our origins - California remains - for better or worse - "Where it's at". Our pioneering and innovations are not limited to wines, Silicon Valley or aerospace - the environment movement is among our "inventions", it would appear. C-MANC's Dredging Committee was formed more than 17 years ago - almost a decade before serious imitation and similar response elsewhere. The Committee headed by Frank Boerger - then and now - presented a report, "The Regulation of Dredging: A Muddle Over Mud", in July, 1978, on dredging problems and permitting before the House's Port Caucus.

Changes since have largely not been for the better. The Corps' new project management procedures have been impresssive in description. Even more impressive was its response and splendid team efforts in Northern California after the October 17 earthquake - an organized capability we have (perhaps too often) seen on our coastline and in our valleys due to storms and floods.

These are on the "plus" side. Slow moving responses have become more often typical, as the Corps' role and priorities shift to its greater environmental sensititivity and necessary accommodations with EPA and others who are "non-project" (seemingly, "anti-project") oriented. The paperwork proliferates, the meetings and conferences, task forces and committees - all grow in what appears often as reverse correlation with the slow pace of projects' maintenance and improvements. Is this to be a permanent - and evergrowing - condition of American life?

Our list perhaps is also becoming too "permanent" - and we will limit it now - before wading into wetlands and mitigation mine fields - except to note also the transportation infracture "discovery" - how "bad is it". (Excerpts from 31 years of previous testimony could reveal earlier alarms we sounded.) DOT's plan/proposals are - at first reading - "of their times", with a surplus of vision and funding deficit. We do however rush to cite the critical highways (and rail) improvements to move/relocate cargoes, needs accelerated by pollution imperatives. Trust funds existing for such Federal support/investment should remain so dedicated, and not comingled with the general budget.

To finish on an upbeat: the good news includes that the dynamics of the West proceed apace; the Pacific Coast is doing fine, thank you, in its trade and shipping, with California showing the greatest growth. No statistics needed this year - they all look good for 1989, and so far, remain that way. Winters too dry and summers too warm produce more boaters, waders and swimmers - there are never too many facilities out our way.

Thank you, Mr. Chairman, and Members - for your consistent patience and courtesy.

Attachment

# # #

CALIFORNIA
Marine Affairs and Navigation Conference

C-MANC

4 April 1990

C-MANC supports fully the President's Budget, and further, recommends additional funding of a limited number of projects.

(Amounts in Thousands)

				FY 1991			
					FY 91 C-MANC Recommendations		
Project	Total Cost C of E	Balance After FY 1989	FY 1990 Conference Report	Work Allowance	President's Budget	Total Recommendations (When Greater than Budget)	Purpose of Funding
POTENTIAL NEW SHORELINE PROTECTION STUDIES							
Pacific Coast Shoreline, Carlsbad	350	350	0	0	0	350	Complete Recon Report
SHORELINE PROTECTION STUDIES IN PROGRESS							
Rancho Palos Verdes	1,360	1,360	90	85	0	500	Initiate Feasibility Phase
San Francisco County, Ocean Beach	875	875	150	143	336	N/C	Complete Recon and Initiate Feasibility Phase
Santa Barbara County	830	360	250	150	122	N/C	Continue Feasibility Phase
POTENTIAL NEW SPECIAL STUDIES							
Coast of California, Storm & Tidal Waves, Central Coast Region	2,000	2,000	0	0	0	450	Expand study to permit examination of Central Coast
Coast of California, Storm & Tidal Waves, South Coast Region	2,000	2,000	0	0	0	800	Expand study to permit examination of South Coast

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4 April 1990

C-MANC supports fully the President's Budget, and further, recommends additional funding of a limited number of projects.

(Amounts in Thousands)

Project	Total Cost C of E	Balance After FY 1989	FY 1990 Conference Report	FY 1990 Work Allowance	FY 1991 FY 91 C-MANC Recommendations President's Budget	FY 1991 FY 91 C-MANC Recommendations Total Recommandations (When Greater than Budget)	Purpose of Funding
POTENTIAL NEW NAVIGATION STUDIES							
Newport Bay Harbor	270	270	0	0	0	270	Complete Recon Report
North Coast of Los Angeles County	510 1/	345	0	0	0	345	Complete Recon Report
San Leandro Bay	375 2/	325	0	0	0	325	Complete Recon Report
Santa Cruz Harbor	360	360	0	0	0	360	Complete Recon Report
West Newport Beach Harbor	270	270	0	0	0	270	Complete Recon Report

1/ Includes $165 incurred prior to 30 September 1977.
2/ Includes $50 incurred prior to 30 September 1978.

Project	Total Cost C of E	Balance After FY 1989	FY 1990 Conference Report	FY 1990 Work Allowance	FY 1991 FY 91 C-MANC Recommendations President's Budget	FY 1991 FY 91 C-MANC Recommendations Total Recommandations (When Greater than Budget)	Purpose of Funding
NAVIGATION STUDIES IN PROGRESS							
Humboldt Harbor & Bay (Deepening)	875	525	315	200	225	N/C	Continue Feasibility Study
Los Angeles-Long Beach Harbors	9,070	1,100	0	850	250	N/C	Complete Feasibility Study
Monterey Harbor	775	775	155	193	210	N/C	Complete Recon Report and Initiate Feasibility Phase
San Francisco Bay Shoreline	4,354	65	65	62	0	N/C	Funded for Completion
Santa Monica Breakwater	535	375	140	150	142	N/C	Continue Feasibility Study

CALIFORNIA
Marine Affairs and Navigation Conference

C-MANC

4 April 1990

C-MANC supports fully the President's Budget, and further, recommends additional funding of a limited number of projects.

(Amounts in Thousands)

		FY 1991					
			FY 1990		FY 91 C-MANC Recommendations		
Project	Total Cost C of E	Balance After FY 1989	Conference Report	Work Allowance	President's Budget	Total Recommendations (When Greater than Budget)	Purpose of Funding
		POTENTIAL NEW PRECONSTRUCTION ENGINEERING AND DESIGN					
San Rafael Canal	11,700 (750)	(750)	(0)	(0)	(150)	N/C	Initiate Design
Santa Barbara Harbor	3/ (780)	(780)	(0)	(0)	(150)	N/C	Initiate Design

3/ Project cost estimate under review

		CONTINUING PRECONSTRUCTION ENGINEERING AND DESIGN					
Los Angeles - Long Beach Harbors	310,000 (6,000)	(6,000)	(750)	(0)	(0)	(3,000)	Initiate Design
Morro Bay Harbor	2,740 (560)	(560)	(100)	(2)	(270)	N/C	Continue Design
Noyo River and Harbor (Breakwater)	23,000 (2,000)	(577)	(137)	(19)	(0)	(400)	Continue Design
Oceanside Harbor	3,600 (750)	(685)	(450)	(428)	(175)	(257)	Complete Design
Ventura Harbor	5,600 (750)	(720)	(440)	(419)	(210)	N/C	Continue Design

(over) →

4 April 1990

C-MANC supports fully the President's Budget, and further, recommends additional funding of a limited number of projects.

(Amounts in Thousands)

FY 1991

Project		Total Cost C of E	Balance After FY 1989	FY 1990		FY 91 C-MANC Recommendations		Purpose of Funding
				Conference Report	Work Allowance	President's Budget	Total Recommendations (When Greater than Budget)	
POTENTIAL NEW CONSTRUCTION PROJECTS								
Redondo Beach (King Harbor)	(N)	5,135	4,350	0	0	0	4,350	Initiate and complete Breakwater construction
CONTINUING CONSTRUCTION PROJECTS								
Oakland Harbor	(N)	54,200	47,360	3,500	3,026	4,400	N/C	Continue Construction
Port San Luis	(N)	12,200	11,310	0	0	0	N/C	
Richmond Harbor	(N)	12,550	9,904	900	778	0	1,000	Continue Construction
Sacramento River Deep Water Ship Channel	(N)	21,700	17,847	2,800	509	3,900	N/C	Continue Construction
San Francisco Bay to Stockton (John F. Baldwin & Stockton Ship Channels)	(N)	123,800	68,978	2,650	2,042	2,050	N/C	Continue Construction
Surfside-Sunset & Newport Beach	(BE)	32,500	22,073	4,470	5,665	0	N/C	No current requirement for periodic nourishment

CALIFORNIA
Marine Affairs and Navigation Conference

4 April 1990

C-MANC supports fully the President's Budget, and further, recommends additional funding of a limited number of projects.

(Amounts in Thousands)

Project	FY 1989 Obligations	FY 1990 Estimated Obligations	FY 1991 FY 91 C-MANC Recommendations President's Budget	FY 1991 FY 91 C-MANC Recommendations Total Recommendations (When Greater than Budget)	Purpose of Funding
OPERATIONS AND MAINTENANCE PROJECTS					
Bodega Bay Harbor	0	0	795	N/C	Periodic dredging
Channel Islands Harbor	3,058	94	3,421	3,700	Periodic dredging and seal north jetty
Crescent City Harbor	1,208	216	130	1,300	Condition survey and repair breakwater
Dana Point Harbor	0	135	0	N/C	No maintenance required
Halfmoon Bay Harbor (Pillar Point Harbor)	0	0	0	N/C	No maintenance required
Humboldt Harbor and Bay	857	3,036	4,177	N/C	Dredging, jetty repair and ocean disposal designation study
Los Angeles - Long Beach Harbors	289	722	0	N/C	No maintenance required
Los Angeles - Long Beach Harbors Model	870	479	155	760	Continue model maintenance, enhancement, and wave data acquisition
Marina Del Rey	146	148	1,700	N/C	Periodic dredging
Morro Bay Harbor	188	859	1,025	N/C	Dredging
Moss Landing Harbor	0	520	0	N/C	No maintenance required
Napa River	1,323	0	0	N/C	No maintenance required
Newport Bay Harbor	0	0	0	N/C	No maintenance required
Noyo River and Harbor	68	805	613	N/C	Dredging and ocean disposal designation study
Oakland Harbor	1,999	1,754	2,091	N/C	Dredging and bridge repair
Oceanside Harbor	104	594	65	N/C	Engineering and design for future dredging
Oceanside Experimental Sand Bypass System	1,005	1,758	0	2,700	Operation of Bypass Plant and construction of second phase
Petaluma River	805	0	0	1,200	Dredging
Port Hueneme	0	115	802	N/C	Dredging
Port San Luis	0	0	1,288	2,300	Breakwater repair

(over) ➙

4 April 1990

C-MANC supports fully the President's Budget, and further, recommends additional funding of a limited number of projects.

(Amounts in Thousands)

Project	FY 1989 Obligations	FY 1990 Estimated Obligations	FY 1991 President's Budget	FY 1991 FY 91 C-MANC Recommendations Total Recommendations (When Greater than Budget)	Purpose of Funding
		OPERATIONS AND MAINTENANCE PROJECTS			
Redondo Beach Harbor (King Harbor)	203	0	0	1,000	Breakwater repair
Redwood City Harbor	410	3,028	0	N/C	No maintenance required
Richmond Harbor	2,584	1,737	2,176	N/C	Dredging
Sacramento River					
Sacramento River (30 ft.)	106	512	2,115	N/C	Dredging and bank stabilization
Sacramento River (Shallow Draft)	82	75	70	N/C	Maintain lock
San Diego Harbor	890	0	0	N/C	No maintenance required
San Diego River & Mission Bay	87	30	877	N/C	Repair revetment adjacent to entrance channel
San Francisco Bay-Delta Model Structure	1,900	1,651	2,323	2,800	Annual maintenance, upgrade model and repair roof
San Francisco Harbor	1,245	3,990	1,530	7,000	Dredging and dredge material disposal management program
San Joaquin River	55	876	1,385	N/C	Dredging and bank stabilization
San Leandro Marina (Jack D. Maltester Channel)	809	379	0	N/C	No maintenance required
San Pablo Bay and Mare Island Strait	1,069	1,034	2,566	N/C	Dredging
San Rafael Creek	0	0	980	N/C	Dredging
Santa Barbara Harbor	167	1,027	750	1,250	Dredging
Santa Cruz Harbor	0	0	0	N/C	No jetty maintenance required
Suisun Bay Channel	248	1,148	859	N/C	Dredging
Suisun Channel	0	685	0	N/C	No maintenance required
Ventura Harbor	927	1,179	1,270	N/C	Dredging
Drift Removal (S.F. Harbor and Bay)	1,305	1,777	1,808	2,000	Drift removal, maintenance of debris boats, and replace dock ramp
		#	#	#	

Mr. **Parsons**. Mr. Chairman and Members of the committee, first I want to thank the committee on behalf of all the California Navigation projects for your longstanding support of navigation in California. And we are real pleased that you are allowing us this time.

While I am here, I just want to briefly mention a project that is dear to my heart, and that is the dredging maintenance and continuation of studies at Ventura Harbor. and I would request that you support the Corps' request of 1.2 million for the maintenance dredging of Ventura Harbor and support the Corps' request for $210,000 to continue the pre-construction engineering and design of the improvements to Ventura Harbor.

I do have a more complete statement, and I will just enter it into the record.

Thank you.

[The statement of Richard Parsons follows:]

VENTURA HARBOR

TESTIMONY
of the
VENTURA PORT DISTRICT

Before The
SUBCOMMITTEE ON ENERGY & WATER DEVELOPMENT
COMMITTEE ON APPROPRIATIONS

Second Session - 101st Congress
April 4, 1990

Ventura Harbor is located along the Southern California coastline in the City of San Buenaventura, approximately 60 miles northwest of the City of Los Angeles. The Harbor opened in 1963. Annual dredging of the harbor entrance area is usually necessary inorder to assure a navigationally adequate channel. In 1968, the 90th Congress made the harbor a Federal project and committed the U. S. Army Corps of Engineers to provide maintenance dredging and a solution to the entrance problem. A detached breakwater and sand trap area, completed by the Corps of Engineers in 1972, alleviated some of the more damaging difficulties but continuing navigational problems have persisted. Additionally, the need for annual maintenance dredging continued, and the Corps of Engineers and the Ventura Port District have conducted maintenance dredging of the Harbor entrance within the limits of their jurisdiction from 1968 through the present time.

The harbor presently generates more than $30 million in gross receipts annually. That of course translates into thousands of both direct and indirect jobs. A significant portion of those jobs are associated with the commercial fishing industry and with vessels serving the offshore oil industry. Additionally, the headquarters for the Channel Islands National Park is located within the harbor, and the commercial vessels transporting visitors to and from the Park are now carrying about 75,000 people per year.

I

All of the operations of the Harbor, particularly those related to commercial fishing and the support boats for the oil industry, are highly dependent upon a navigationally adequate entrance to the Harbor. It is therefore respectfully requested that the Congress support the Army Corps of Engineers FY 91 Civil Works Budget request of $1,270,000 for the maintenance dredging of the Ventura Harbor entrance channel. The area of Corps of Engineers responsibility is illustrated in Photo No. 1.

II

The U. S. Army Corps of Engineers and the Ventura Port District finalized in June 1989 a cost shared Feasibility Study of the dangerous conditions associated with the harbor entrance. That study recommended a series of improvements designed to reduce shoaling and wave action in the entrance channel and involves the following components (see the attached color aerial photograph):

1) a 250 ft. spur groin at the end of the north jetty to improve the deflection of littoral sand flows into sand trap B;

2) a 300 ft. dogleg extension to the south end of the detached breakwater to provide improved wave sheltering for vessels transiting the entrance;

3) a 650 ft. long groin on the south beach approximately 1000 ft. downcoast from the south jetty to provide a mechanism for trapping drift material from the south; and

4) deepening and extending the entrance channel and sand trap A to provide for improved wave height attenuation and for additional sand storage volume.

The construction of the above features will also place the maintenance dredging of the entrance channel and sand trap areas on a biennial cycle rather than the present annual cycle. The fact that this results in a $433,000 reduction in average annual maintenance costs, becomes a key component in the 1.8:1 benefit/cost ratio justifying the $6.5 million project. The Port District, as the local sponsor, is committed to funding 20% of this project cost. Average annual costs for this project are estimated at $615,000. Average annual benefits, primarily savings in maintenance costs and commercial fishing losses, are estimated at $1,170,000.

With the support of this Subcommittee the Congress appropriated $440,000 in FY 90 to continue with the Design phase of the planned improvements. In order to assure that this project moves forward expeditiously, the Congress is urged to support the Army Corps of Engineers FY 91 Civil Works Budget request of $210,000 to continue the preconstruction engineering and design of the recommended project.

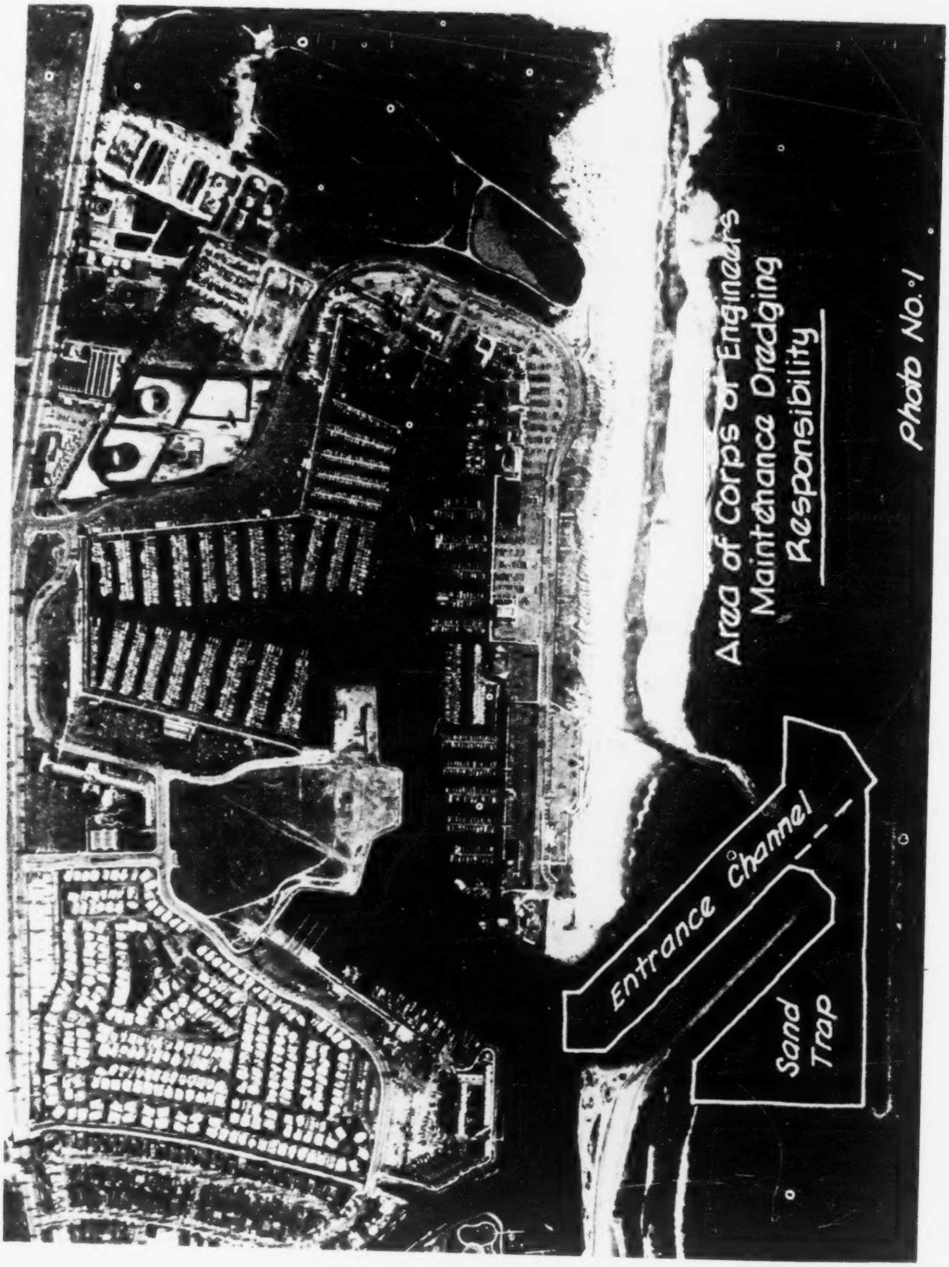
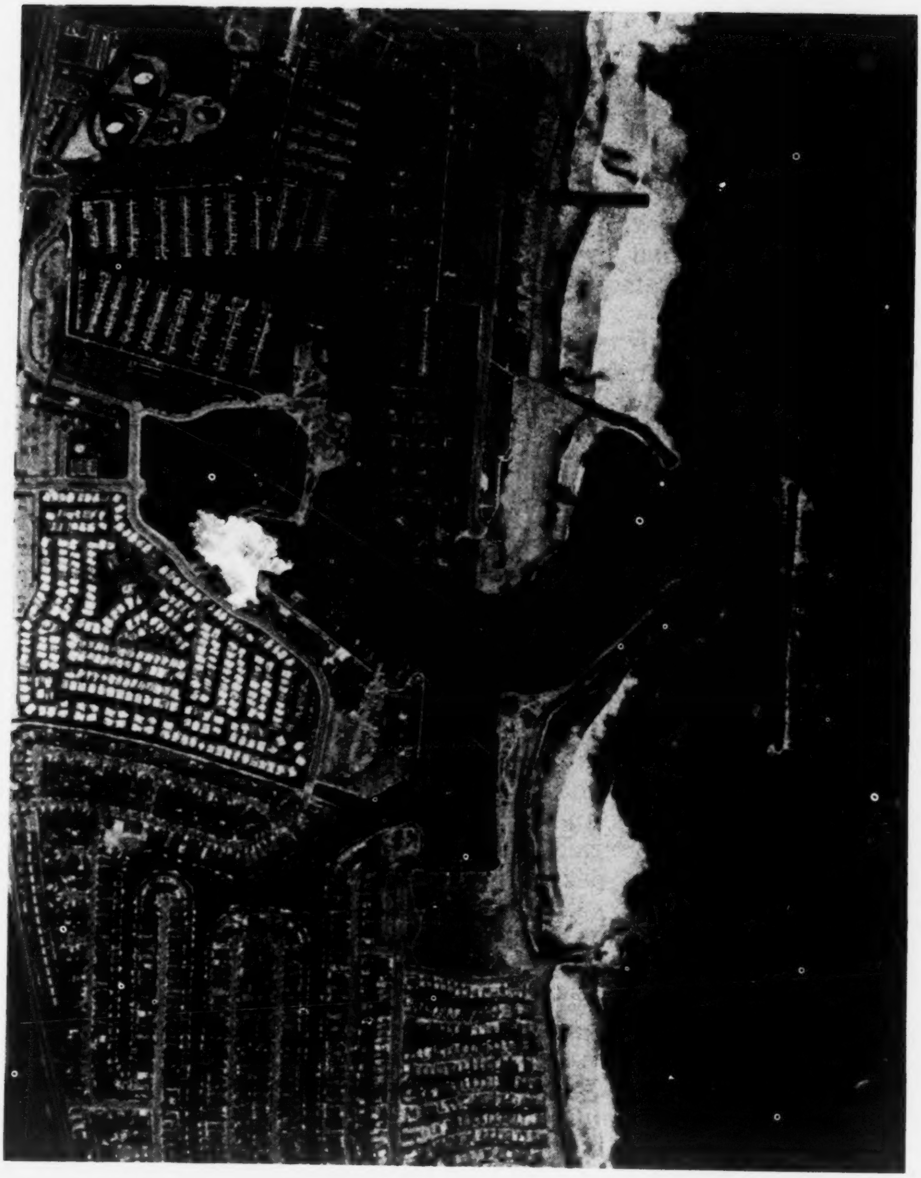

Area of Corps of Engineers
Maintenance Dredging
Responsibility
Entrance Channel
Sand
Trap

Photo No. 1



Mr. LAGNER. We will now present our mayors, Mr. Chairman. We are led by Mayor George Livingston of the City of Richmond. George has now been back here for many years, and I recall his appearance over 12 or 15 years ago, so this is your second coming for you here as mayor, George.

Mr. LIVINGSTON. Thank you very much.

Mr. Chairman and Members of the subcommittee, I am Mayor of the City of Richmond of California. We many times get confused with Richmond, Virginia; so I am from Richmond, California.

I am accompanied by Michael R. Powers, Port Director of the City of Richmond; also Lawrence G. Mallon, Special Counsel to the Port of Richmond.

I appear on behalf of the City Council of the City of Richmond, and I will briefly summarize.

We are running out of time, and I want to make sure that I give you some information that could be helpful to the future of our city.

The City Council recognizes and expresses great gratitude to our local congressman and the Honorable George Miller and to you, Mr. Chairman, as well as Congressman Fazio and the other Members of this subcommittee and staff for their prior efforts in funding this navigation project of critical importance to the future development of the Port of Richmond.

I am reading this because we have an excellent staff, and I want to make sure that we say the right things. You can ad lib when you are in politics, but this is something that is very factual, and we want to make sure that you get the facts.

The City Council formally evidenced its support for the navigation project in City Council Resolution No. 158–81 adopted August 10, 1981, which authorized the entry into a local cooperation agreement (LCA) with the Secretary of the Army under Section 221 of the Public Law 91–611 (42 U.S.C. 1962D–5B).

The City of Richmond seeks reinstatement of one million dollars for the Richmond Navigation Project authorized in the Water Resources Development Act of 1986 in the fiscal year 1991 Energy and Water Appropriations measure before this subcommittee.

These amounts were requested by the Offices of the District and Division Engineer, U.S. Army Corps of Engineers, but were deleted from the President's budget request.

Project construction is currently scheduled to commence in fiscal year 1993 with a final LCA executed in December, 1991, and contract award in April, 1992 with construction completed by December, 1993.

Under that proposed project schedule, additional appropriations are required in fiscal years 1991 and 1992 to fund the preparation of a Supplemental Environmental Impact Statement (SEIS) for the project for the one originally prepared in 1981, a General Design Memorandum (GDM) for the project, and for additional sediment testing and analysis.

We are advised by district staff that deletion of funds in the succeeding fiscal year may jeopardize their authority to continue to expend remaining amounts in the current fiscal year 1990 for Preconstruction Engineering and Design (PED) and continuing environmental studies, including dredged material testing, as well as for third party contracting for supplemental EIS preparation.

The City Council, as the non-project sponsor, is prepared to meet its statutory cost-sharing requirements under the 1986 Act.

In substantial fulfillment of its required financial contribution or project construction cost, in May, 1989, the City Council by Ordinance No. 21-89, created a Richmond Harbor Navigation Improvement District, believed to be the first of its kind in the Nation.

This will ensure timely payment of the local sponsor's share of project construction costs through the anticipated levy of benefit assessments on the major beneficiaries of the navigation improvements.

We current plan to be in a position to bring a resolution of intention before the City Council to levy a benefit assessment for this purpose in Spring, 1992, in order that bonds may be issued and assessments collected in the 1992-93 tax year for deposit into the escrow account in advance or project construction as required.

On the very critical subject of dredged material management to ourselves and other Bay Area Ports, we express our gratitude to the subcommittee for its inclusion of Federal funds in fiscal year 1990 for the Dredged Material Disposal Management Program (DMP) Study for San Francisco Bay, encompassing all available options for disposal of dredged material, including ocean, bay, and upland sites.

We request the subcommittee increase funding of this initiative to a level of $7 million in fiscal year 1991. This will provide the basis for the District's proposed Long-term Management Strategy (LTMS) for San Francisco Bay Area dredged material disposal.

We support the initiative of the Division Engineer, General Sobke, to proceed immediately with this critically necessary assessment from the perspective of all Bay Area ports.

However, we continue to view the process of designation of an ocean disposal site as a Federal responsibility not subject to mandatory cost-sharing requirements.

We do support the proposal that the State of California become more involved with the resolution of this long-term disposal issue of critical importance to the future trade and transportation posture of the state through participation in this study effort through the performance of certain research task elements.

We will continue to work towards the development of a political consensus of this issue with Federal, state, and local agencies and organizations to achieve an acceptable solution to this long-term issue.

We still believe that additional options and disposal sites, including identified ocean disposal sites, are necessary to resolve the long-term needs of the Bay Area though maintenance dredging of existing channels in the Port of Richmond contribute only approximately 1 percent by volume of current dredged material disposed at existing sites.

In summary, as the local sponsor and principal project proponent, we reaffirm our support and are prepared to move forward in partnership with the Corps to execute the proposed project schedule for completion in fiscal year 1993.

We have made concrete progress in fulfillment of our project financial responsibilities through the creation of a Navigation Benefit Assessment District.

We are prepared to execute a final LCA to set the stage for project construction in December, 1992. We are currently undertaking the identification and acquisition of a suitable upland disposal site for dredged material disposal from project construction.

We ask the subcommittee's help to assure the availability of Federal funds in fiscal year 1991 Energy and Water Appropriations measure, with the anticipation of the requirement for a like amount in the following year, to complete the necessary plans and studies to permit contract award and commencement of project construction in fiscal year 1993.

[The statement of George L. Livingston follows:]

Office of
THE MAYOR
City of
Richmond

STATEMENT
OF
GEORGE L. LIVINGSTON, MAYOR
AT A HEARING ON
FISCAL YEAR 1991 ENERGY AND WATER APPROPRIATIONS
BEFORE
THE SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
COMMITTEE ON APPROPRIATIONS
U. S. HOUSE OF REPRESENTATIVES
WASHINGTON, D.C.

WEDNESDAY, APRIL 4, 1990

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE:

I AM GEORGE L. LIVINGSTON, MAYOR OF THE CITY OF RICHMOND, CALIFORNIA. I AM ACCOMPANIED BY MR. MICHAEL R. POWERS, PORT DIRECTOR, AND MR. LAWRENCE G. MALLON, SPECIAL COUNSEL TO THE PORT. I APPEAR AT THE REQUEST AND ON BEHALF OF THE CITY COUNCIL OF THE CITY OF RICHMOND AS THE LOCAL SPONSOR OF THE PROJECT FOR NAVIGATION, RICHMOND HARBOR, CALIFORNIA, AUTHORIZED UNDER THE WATER RESOURCES DEVELOPMENT ACT OF 1986 (PUBLIC LAW 99-662).

THE CITY COUNCIL RECOGNIZES AND EXPRESSES ITS GRATITUDE TO OUR LOCAL CONGRESSMAN, THE HONORABLE GEORGE MILLER, AND TO YOU, MR. CHAIRMAN, AS WELL AS, CONGRESSMAN FAZIO AND THE OTHER MEMBERS OF THIS SUBCOMMITTEE AND STAFF FOR THEIR PRIOR EFFORTS IN FUNDING THIS NAVIGATION PROJECT OF CRITICAL IMPORTANCE TO THE FUTURE DEVELOPMENT OF THE PORT OF RICHMOND.

2600 Barrett Ave. P.O. Box 4046 Richmond California 94804 telephone: 415 620-6503

THE CITY COUNCIL FORMALLY EVIDENCED ITS SUPPORT FOR THE NAVIGATION PROJECT IN CITY COUNCIL RESOLUTION NO. 158-81 ADOPTED AUGUST 10, 1981, WHICH AUTHORIZED THE ENTRY INTO A LOCAL COOPERATION AGREEMENT (LCA) WITH THE SECRETARY OF THE ARMY UNDER SECTION 221 OF THE PUBLIC LAW 91-611 (42 U.S.C. 1962D-5B).

THE CITY OF RICHMOND SEEKS REINSTATEMENT OF ONE MILLION DOLLARS FOR THE RICHMOND NAVIGATION PROJECT AUTHORIZED IN THE WATER RESOURCES DEVELOPMENT ACT OF 1986 IN THE FISCAL YEAR 1991 ENERGY AND WATER APPROPRIATIONS MEASURE BEFORE THIS SUBCOMMITTEE. THESE AMOUNTS WERE REQUESTED BY THE OFFICES OF THE DISTRICT AND DIVISION ENGINEER, U.S. ARMY CORPS OF ENGINEERS, BUT WERE DELETED FROM THE PRESIDENT'S BUDGET REQUEST.

PROJECT CONSTRUCTION IS CURRENTLY SCHEDULED TO COMMENCE IN FISCAL YEAR 1993 WITH A FINAL LCA EXECUTED IN DECEMBER, 1992, AND CONTRACT AWARD IN APRIL, 1993, WITH CONSTRUCTION COMPLETED BY DECEMBER, 1993. UNDER THAT PROPOSED PROJECT SCHEDULE, ADDITIONAL APPROPRIATIONS ARE REQUIRED IN FISCAL YEAR 1991 AND 1992 TO FUND THE PREPARATION OF A SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (SEIS) FOR THE PROJECT FOR THE ONE ORIGINALLY PREPARED IN 1981, A GENERAL DESIGN MEMORANDUM (GDM) FOR THE PROJECT, AND FOR ADDITIONAL SEDIMENT TESTING AND ANALYSIS.

THESE DOCUMENTS WILL REFLECT THE STAGED CONSTRUCTION ON THE PROJECT IN TWO PHASES FROM THE CURRENT 35 TO 38 FEET M.L.L.W. IN

PHASE I TO BE FOLLOWED BY CONSTRUCTION TO THE AUTHORIZED DEPTH OF 41 FEET M.L.L.W. IN PHASE II, AND THAT UPLAND DISPOSAL IS NOW SUBSTITUTED FOR THE ORIGINALLY ANTICIPATED OCEAN DISPOSAL OF THE ESTIMATED 1.5 MILLION CUBIC YARDS DREDGED MATERIAL RESULTING FROM NEW CONSTRUCTION WORK.

WE ARE ADVISED BY DISTRICT STAFF THAT DELETION OF FUNDS IN THE SUCCEEDING FISCAL YEAR MAY JEOPARDIZE THEIR AUTHORITY TO CONTINUE TO EXPEND REMAINING AMOUNTS IN THE CURRENT FISCAL YEAR 1990 FOR PRE-CONSTRUCTION ENGINEERING AND DESIGN (PED) AND CONTINUING ENVIRONMENTAL STUDIES, INCLUDING DREDGED MATERIAL TESTING, AS WELL AS FOR THIRD PARTY CONTRACTING FOR SUPPLEMENTAL EIS PREPARATION.

THE CITY COUNCIL, AS THE NON-FEDERAL PROJECT SPONSOR, IS PREPARED TO MEET ITS STATUTORY COST-SHARING REQUIREMENTS UNDER THE 1986 ACT. IN SUBSTANTIAL FULFILLMENT OF ITS REQUIRED FINANCIAL CONTRIBUTION TO PROJECT CONSTRUCTION COST, IN MAY, 1989, THE CITY COUNCIL BY ORDINANCE NO. 21-89 CREATED A RICHMOND HARBOR NAVIGATION IMPROVEMENT DISTRICT, BELIEVED TO BE THE FIRST OF ITS KIND IN THE NATION. THIS WILL ENSURE TIMELY PAYMENT OF THE LOCAL SPONSOR'S SHARE OF PROJECT CONSTRUCTION COSTS THROUGH THE ANTICIPATED LEVY OF BENEFIT ASSESSMENTS ON THE MAJOR BENEFICIARIES OF THE NAVIGATION IMPROVEMENTS. WE CURRENTLY PLAN TO BE IN A POSITION TO BRING A RESOLUTION OF INTENTION BEFORE THE CITY COUNCIL TO LEVY A BENEFIT ASSESSMENT FOR THIS PURPOSE IN

SPRING, 1992, IN ORDER THAT BONDS MAY BE ISSUED AND ASSESSMENTS COLLECTED IN THE 1992-93 TAX YEAR FOR DEPOSIT INTO THE ESCROW ACCOUNT IN ADVANCE OF PROJECT CONSTRUCTION AS REQUIRED.

ON THE VERY CRITICAL SUBJECT OF DREDGED MATERIAL MANAGEMENT TO OURSELVES AND OTHER BAY AREA PORTS, WE EXPRESS OUR GRATITUDE TO THE SUBCOMMITTEE FOR ITS INCLUSION OF FEDERAL FUNDS IN FISCAL YEAR 1990 FOR THE DREDGED MATERIAL DISPOSAL MANAGEMENT PROGRAM (DMP) STUDY FOR SAN FRANCISCO BAY, ENCOMPASSING ALL AVAILABLE OPTIONS FOR DISPOSAL OF DREDGED MATERIAL, INCLUDING OCEAN, BAY AND UPLAND SITES. WE REQUEST THE SUBCOMMITTEE INCREASE FUNDING OF THIS INITIATIVE TO A LEVEL OF SEVEN MILLION DOLLARS IN FISCAL 1991. THIS WILL PROVIDE THE BASIS FOR THE DISTRICT'S PROPOSED LONG-TERM MANAGEMENT STRATEGY (LTMS) FOR SAN FRANCISCO BAY AREA DREDGED MATERIAL DISPOSAL. WE SUPPORT THE INITIATIVE OF THE DIVISION ENGINEER, GENERAL SOBKE, TO PROCEED IMMEDIATELY WITH THIS CRITICALLY NECESSARY ASSESSMENT FROM THE PERSPECTIVE OF ALL BAY AREA PORTS. HOWEVER, WE CONTINUE TO VIEW THE PROCESS OF DESIGNATION OF AN OCEAN DISPOSAL SITE AS A FEDERAL RESPONSIBILITY NOT SUBJECT TO MANDATORY COST-SHARING REQUIREMENTS.

WE DO SUPPORT THE PROPOSAL THAT THE STATE OF CALIFORNIA BECOME MORE INVOLVED WITH THE RESOLUTION OF THIS LONG-TERM DISPOSAL ISSUE OF CRITICAL IMPORTANCE TO THE FUTURE TRADE AND TRANSPORTATION POSTURE OF THE STATE THROUGH PARTICIPATION IN THIS STUDY EFFORT THROUGH THE PERFORMANCE OF CERTAIN RESEARCH TASK

ELEMENTS.

UNFORTUNATELY, WE UNDERSTAND THAT THE STUDY IS NOT ANTICIPATED TO BE COMPLETED AND POTENTIAL OCEAN DISPOSAL AREAS IDENTIFIED UNTIL 1994. WE, THEREFORE, CONCUR IN THE DISTRICT ENGINEER'S RECOMMENDATION AND ARE PROCEEDING WITH THE ACQUISITION OF AN UPLAND DISPOSAL SITE BY DECEMBER, 1990, IN ORDER TO MAINTAIN THE CURRENT ANTICIPATED PROJECT CONSTRUCTION SCHEDULE. WE WOULD EXPECT TO RECEIVE APPROPRIATE PROJECT CREDIT IN THE APPROPRIATE COST-SHARING RATIO APPLICABLE TO GENERAL NAVIGATION FEATURES (GNF) FOR OUR EFFORTS IN IDENTIFYING AND ACQUIRING SUCH A SITE THAT MAY BE OF ADDITIONAL BENEFIT BEYOND THE SCOPE OF OUR OWN CONSTRUCTION PROJECT.

WE WILL CONTINUE TO WORK TOWARDS THE DEVELOPMENT OF A POLITICAL CONSENSUS OF THIS ISSUE WITH FEDERAL, STATE, AND LOCAL AGENCIES AND ORGANIZATIONS TO ACHIEVE AN ACCEPTABLE SOLUTION TO THIS LONG-TERM ISSUE. WE STILL BELIEVE THAT ADDITIONAL OPTIONS AND DISPOSAL SITES, INCLUDING IDENTIFIED OCEAN DISPOSAL SITES, ARE NECESSARY TO RESOLVE THE LONG-TERM NEEDS OF THE BAY AREA THOUGH MAINTENANCE DREDGING OF EXISTING CHANNELS IN THE PORT OF RICHMOND CONTRIBUTE ONLY APPROXIMATELY ONE PER CENT BY VOLUME OF CURRENT DREDGED MATERIAL DISPOSED AT EXISTING SITES.

IN SUMMARY, AS THE LOCAL SPONSOR AND PRINCIPAL PROJECT PROPONENT, WE REAFFIRM OUR SUPPORT AND ARE PREPARED TO MOVE

FORWARD IN PARTNERSHIP WITH THE CORPS TO EXECUTE THE PROPOSED PROJECT SCHEDULE FOR COMPLETION IN FISCAL YEAR 1993. WE HAVE MADE CONCRETE PROGRESS IN FULFILLMENT OF OUR PROJECT FINANCIAL RESPONSIBILITIES THROUGH THE CREATION OF A NAVIGATION BENEFIT ASSESSMENT DISTRICT. WE ARE PREPARED TO EXECUTE A FINAL L.C.A. TO SET THE STAGE FOR PROJECT CONSTRUCTION IN DECEMBER, 1992. WE ARE CURRENTLY UNDERTAKING THE IDENTIFICATION AND ACQUISITION OF A SUITABLE UPLAND DISPOSAL SITE FOR DREDGED MATERIAL DISPOSAL FROM PROJECT CONSTRUCTION. WE ASK THE SUBCOMMITTEE'S HELP TO ASSURE THE AVAILABILITY OF FEDERAL FUNDS IN FISCAL YEAR 1991 ENERGY AND WATER APPROPRIATIONS MEASURE, WITH THE ANTICIPATION OF THE REQUIREMENT FOR A LIKE AMOUNT IN THE FOLLOWING YEAR, TO COMPLETE THE NECESSARY PLANS AND STUDIES TO PERMIT CONTRACT AWARD AND COMMENCEMENT OF PROJECT CONSTRUCTION IN FISCAL YEAR 1993.

Mr. **Powers.** I will submit my comments.

Mr. **Langner.** Our next mayor has been before you many times before: Mayor Dave Karp.

Mr. **Karp.** Chairman, Fazio, Mr. Bevill Chairman and distinguished Members, San Leandro every four years dredges the Jack Dimaltester Federal Channel. The cost is approximately $700,000 per each dredging cycle.

We have operated the land disposal site on a license agreement for the last decade. This agreement expires on this last cycle.

The license agreement means two things. The dredging could become the area problems, and as you remember earlier today, Nancy Pelosi talked about the San Francisco dredge crisis, and that is a dredge crisis where we may have to bring our dredge to the spoils out to sea, maybe 30 miles out to sea.

Adding to the already overburdened ability of the Army Corps to dispose of dredge materials, the potential of the San Leandro site will require bringing the dredge materials to Alcatraz or to the sea.

The cycle cost from $700,000 to approximately $5 million for each one of the cycles. What we want to do is obtain by purchase through the help of the Federal Government the land site we are currently using under license agreement.

That would be approximately $1 million or even less, therefore, ensuring a win-win situation where we would have the insurance in the future of always having the site and maintaining like an insurance policy, a site where we can put the dredge spoils on for six to $700,000 each cycle.

Basically, that's it. It's a win-win situation. Long into the future and the next dredge spoil cycle is about three years henceforth.

Again, I appreciate all the hard work this group has done in the past. I thank you for allowing me the opportunity to speak before you.

Thank you very much.

[The statement of Dave Karp follows:]

MAYOR DAVE KARP
City of San Leandro

STATEMENT OF

THE HONORABLE DAVE KARP
Mayor of San Leandro

on

DREDGE SPOILS SOLUTIONS FOR SAN LEANDRO

before the

SUBCOMMITTEE ON ENERGY AND WATER
COMMITTEE ON APPROPRIATIONS
UNITED STATES HOUSE OF REPRESENTATIVES

APRIL 4, 1990

CIVIC CENTER • 835 EAST 14TH STREET • SAN LEANDRO, CALIFORNIA 94577
TELEPHONE (415) 577-3355 FAX (415) 577-3340 RESIDENCE (415) 483-1259

Mr. Chairman and Members of the Subcommittee:

My name is Dave Karp. I am the Mayor of the City of San Leandro, California. It is also my honor to serve as President of the Alameda County Mayors' Conference and on the Advisory Board of the United States Conference of Mayors. Thank you for the opportunity to appear before you to provide testimony on fiscal 1991 water resources appropriations, and to offer a proposal on behalf of the City of San Leandro regarding the future status of the dredge spoil disposal area for our marina, for which the subcommittee has provided longstanding and much appreciated support.

As the Chairman and Subcommittee Members know, the problem of dredge disposal is one of the most important facing the San Francisco Bay area, due to the ongoing need for significant dredging of Bay area ports and harbors. As part of a potential solution to this problem, I wish to suggest to the Subcommittee a possible option for assuring future availability of dredge spoil disposal capacity for our marina in an environmentally sound manner.

We believe that our proposal offers an opportunity for significant Federal savings in future dredge disposal operations, as an alternative to much higher potential costs for offshore disposal of dredge spoils.

Our 500-berth marina has 2.1 miles of channel which must be dredged periodically. Since 1973, the undeveloped, 114-acre disposal site has been used four times for deposit of a total of approximately 593,000 cubic yards of dredged sediments, under a temporary license from the owner of the property. The City of San Leandro has no permanent rights to continue use of our current site beyond expiration of the temporary license, which could add to the Bay area's disposal capacity problem.

We would request that the Subcommittee consider including an appropriation of $1,000,000 in fiscal 1991 for City purchase of 85-114 acres of the disposal area from its current owner, which would then be utilized for permanent dredge spoil disposal purposes. I emphasize that though Federal funds would be used to purchase the disposal area, title would remain with the City and all maintenance functions would be the responsibility of the City at no cost to the Federal government. Federal responsibility would be only for the continued work associated with the actual periodic dredging of the marina channel.

The site is currently operated pursuant to Corps of Engineers and California Regional Water Quality Control Board permit specifications. In an effort to assure continuation of environmentally sound operation of the San Leandro marina, and its status as a Federal facility, the City has performed significant improvements to the property and developed a Dredge Disposal Site Material Disposal Operational Plan. The plan will assure continued use of the present site in accordance with regulatory agency requirements.

The City of San Leandro has enjoyed an excellent working partnership with the Army Corps. We have presented our proposal to them and hope that their cooperation will be forthcoming.

Mr. Chairman, I am well aware that the problem of dredge spoils disposal in the San Francisco Bay area goes far beyond San Leandro. But I am hopeful that if our portion of the problem is solved with this Subcommittee's assistance, a significant contribution will be made towards an overall solution which must eventually be forthcoming.

Mr. Chairman, thank you again for your interest and consideration, and for your consistently strong support for our marina. If I can answer any questions or be of assistance to you or the subcommittee on this or other matters, please do not hesitate to contact me.

Mr. LANGNER. Thank you, David.

We have Mayor Sheila Lodge, City of Santa Barbara, who has also been with us many times.

Ms. LODGE. As Mayor of Santa Barbara, California, I would like to express our gratitude for the maintenance dredging funds for the Federal channel at Santa Barbara's Harbor.

We would like to add to the fiscal year 1991 Appropriations $2 million of operations and maintenance money, with which to replace dredge spoils that have drifted from the federally approved dump site back into the Federal Channel, endangering the movements of commercial and search and rescue vessels.

We would greatly appreciate your favorable consideration.

Thank you.

[The statement of Sheila Lodge follows:]

Before

House, Committee on Appropriations
Subcommittee on Energy and Water Development
Hon. Tom Bevill, Chairman

Testimony of Sheila Lodge
Mayor
City of Santa Barbara, California
April 4, 1990
(Verbal)

Mr. Chairman,

As Mayor of Santa Barbara, California, I thank the Committee for its sponsorship in the past of maintenance dredging funds for the Federal channel at Santa Barbara, and now ask the Committee to add to the FY 1991 Appropriations package, $2,000,000 of Operations and Maintenance money, with which to replace dredge spoils that have drifted from the Federally approved dump site into the Santa Barbara Harbor Federal Channel, endangering the movements of commercial and search and rescue vessels.

Thank you Mr. Chairman.

Mr. **Langner**. I would just note in passing, Mr. Chairman, it's very difficult to stop using the term "dredge spoils." It's not in favor. But we have used it over the years.

We next have another old timer, Mayor Larry Bagley, of Oceanside.

Mr. **Bagley**. Thank you, Bob.

Thank you, Mr. Chairman. This is not quite as simple as the last request I had. It regards the Sand Bypass system in the City of Oceanside, which was authorized several years ago and is now near completion.

We have finally received a report from the Corps of Engineers, a status report on the operation of the first phase, it's actually exceeding their expectations on the amount of sand they are able to pump from the harbor entrance onto the beaches. And it's had a noticeable effect on the beaches.

We are asking for funding for the next phase which would fluid the fluidizers, which would enable us to expand the area of operation of those dredges from some 5,000 square feet to about 50,000 square feet.

And it's the installation of these fluidizers that is really the nut of the experience. And with the expenditure made thus far and with the success they have had, we hope to persuade this committee to put $2.7 million into the President's budget, which was not included this year.

We feel that it's an investment, an investment that can pay off for all of our coastal cities and all of our harbors.

We do urge you to do this. We have submitted a complete report, including the status report we received from the district office.

The other item I want to talk with is the breakwater in the City of Oceanside. In the President's budget, they have recommended $175,000. With the addition of $82,000 more, they complete the preconstruction engineering and design, and we would be able then to go on to the Authorization Committee.

And if we can get that $82,000 included this year, that will save at least two years on the project and probably save a lot more money than that.

Again, I want to thank this committee for its understanding sincerely.

Thank you.

[The statement of Larry Bagley follows:]

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619-966-4570

April 4, 1990

TESTIMONY TO THE HOUSE ENERGY AND WATER DEVELOPMENT SUBCOMMITTEE

Storm Damage Reduction and Navigation Improvements Oceanside Harbor, California

Honorable Chairman and Subcommittee Members:

The Oceanside Harbor District, City of Oceanside, California, respectfully requests that the United States Congress appropriate $257,000 in Fiscal Year 1991 to fund completion of preconstruction engineering and design (PED), including plans and specifications, for the Oceanside Harbor Breakwater Modifications Project.

The Administration's proposed appropriation of $175,000 in Fiscal Year 1991 will not fund completion of PED. Delaying completion of the project will only increase costs. With the requested funding, PED can be completed in Fiscal Year 1991.

This project modifies the protective structures of Oceanside Harbor to reduce storm damages in the harbor and to improve the safety of the entrance channel for navigation.

Due to the configuration of the harbor entrance, waves from the south and southwest penetrate relatively uninterrupted through the main channel entrance and towards the inner harbor. Estimated average annual losses from the frequent repair and replacement of floats, piles and revetment, and damages to commercial and recreational craft in the harbor, are $517,000.

Waves also frequently break at the harbor entrance due to a combination of shoaling and high waves and results in hazardous navigation in the channel. This results in lost income to harbor operations of $87,000 annually and vessel damages in the entrance of $50,000 annually. Thirteen persons have died at Oceanside Harbor attempting to navigate in the entrance since 1963.

The recommended plan involves extending the north breakwater 300 feet, and constructing a 180 foot stub groin off of the south jetty. The plan also recommends expanding an advance maintenance area in the entrance channel in order to maintain the authorized depth of minus 20 feet MLLW. These modifications will correct the serious surge problem which causes extensive property damage within the Harbor and threatens the safety of both military, commercial and recreational boaters. This problem is particularly critical for the commercial vessels which use Oceanside Harbor as a home port on a year-round basis, and must rely on a safe port of refuge for their livelihood. We are currently expending over $8.6 million of public funds to rehabilitate the docking system and shoreline protection within the Harbor. Without correction of the breakwater defects, the lifespan of these improvements will be cut in half.

The U.S. Army Board of Engineers for Rivers and Harbors (BERH) has recommended approval and construction of this project. They have stated that the storm damage and navigation conditions at Oceanside Harbor are high priority problems and significant enough to warrant Federal involvement.

The project has a Benefit to Cost Ratio (BCR) of 1.5:1.0. The estimated total cost of the project is $4,970,000 of which $3,263,000 is federal and $1,707,000 is non-federal. We, as the local sponsor, are willing and financially able to provide the required cost sharing of the project and are anxious to move forward with the improvements.

The requested improvements will also protect the U.S. Army Corps of Engineers' Experimental Sand Bypass System, which sits completely unprotected in the mouth of the harbor.

In addition to commercial fishing facilities, the Oceanside Harbor also supports numerous commercial establishments, which rely on the safety and adequacy of boating facilities for their economic well-being. Oceanside Harbor is also the only port of refuge between Dana Point and San Diego, and is home base for the Coast Guard cutter Point Hobart. U.S. Navy vessels entering the USMC Camp Pendleton boat basin pass through the same breakwater entrance as boaters entering Oceanside Harbor.

These breakwater modifications, which are for navigation safety reasons and the prevention of wave-induced damage, are appropriate for Federal involvement. The Harbor District is willing to provide our fair share of project cost and requests that the U.S. Army Corps of Engineers, Civil Works Division, be directed to proceed with the project.

I urge your support to ensure that Oceanside Harbor and USMC Camp Pendleton boat basin have a safe entrance.

This request is submitted on behalf of the Oceanside Harbor District and its governing body, the City Council of the City of Oceanside, sitting as the Harbor District Board of Directors.

Lawrence M. Bagley
President, Board of Directors

300 NORTH HILL STREET • OCEANSIDE, CALIFORNIA 92054-2885
619-966-4570

April 4, 1990

TESTIMONY TO THE HOUSE ENERGY AND WATER DEVELOPMENT SUBCOMMITTEE

Oceanside Harbor Maintenance Dredging
Oceanside, California

Honorable Chairman and Subcommittee Members:

The Oceanside Harbor District, City of Oceanside, California, urges your support of the Administration's proposed appropriation of $65,000 in Fiscal Year 1991 to fund engineering and design for future maintenance dredging of the Oceanside Harbor entrance. Future dredging will be required to alleviate inner-harbor surge generated from shoaling at the harbor entrance and for safe navigation of the entrance channel.

In 1942, the Del Mar Boat Basin was constructed by the Department of the Navy at Camp Pendleton. The basin was constructed for training amphibious forces of the Marine Corps. Being built as a war-time measure, little consideration was given to the effect of the harbor structures on the surrounding physical environment. As a result, sedimentation in the harbor entrance and erosion of downcoast beaches was noticed almost immediately. Maintenance dredging of Oceanside Harbor should continue to be a Federal responsibility in accordance with the 1965 River and Harbor Act.

Oceanside Harbor serves as the entrance to USMC Camp Pendleton for military vessels and provides berthing for the Coast Guard cutter Point Hobart. More than one-quarter of harbor traffic is commercial fishing boats or military vessels. Without your support, many of the harbors of refuge which cannot support their dredging requirements, such as Oceanside, would be jeopardized.

I urge your support for continued Federal funding of maintenance dredging projects for small craft harbors and harbors of refuge.

This request is submitted on behalf of the Oceanside Harbor District and its governing body, the City Council of the City of Oceanside, sitting as the Harbor District Board of Directors.

L. Bagley
Lawrence M. Bagley
President, Board of Directors

Mr. **Langner**. Mayor Bagley is accompanied by Jim Manues, one of our Directors and Chief Executive Officer.

We next have Mayor Pro Tem John McTaggart, Rancho Palos Verdes.

Mr. **McTaggart**. Mr. Chairman, Members of the committee, we thank the committee for the previous investigation appropriations. You have made it possible for the Secretary to conduct the Coastline Reconnaissance Study at Portuguese Bend in the City of Rancho Palos Verdes.

Tidal action makes this project necessary. The City must depend on the Corps to begin the feasibility study of this worthy public works project.

Mr. Chairman and Members of the committee, this landslide poses a serious threat to the public interests, several hundred acres of marine environment, and considerable public property.

The City Council deeply appreciates the support of this committee to solve the problem. We also appreciate the support of the Honorable Mr. Anderson and Mr. Rohrabacher.

Thank you.

[The statement of John McTaggart follows:]

RANCHO PALOS VERDES

Before

House, Committee on Appropriations,
Subcommittee on Energy and Water Development
The Honorable Tom Bevill, Chairman

Testimony of City of Rancho Palos Verdes
Landslide Committee
April 4, 1990
John McTaggart, Mayor Pro Tem

Mr. Chairman:

I thank the Committee for previous investigation appropriations. You have made it possible for the Secretary to conduct a coastline Reconnaissance Study at Portuguese Bend in the City of Rancho Palos Verdes, California.

Tidal action makes this project necessary. The City must depend on the Corps to begin a Feasibility Study of this worthy public works project.

Mr. Chairman, this landslide poses a serious threat to the public interest, several hundred acres of marine environment, and considerable public property. The City Council deeply appreciates the support of this committee to solve the problem.

Mr. **Langner**. Thank you.

Now we have our Chairman Elect, Dan Allen, Chief Harbor Engineer for the Port of Long Beach, who will be welcoming you next year at the luncheon just as Richard Parsons this year is our leader.

Mr. **Allen**. Mr. Chairman and Members of the committee, I won't restate my written testimony on funding aids for the Port of Long Beach Development Plan, especially since Congressman Glenn Anderson so adequately addresses our plan with you, but I have submitted it for the record.

What I will emphasize, however, are three points. First, our projects are significant to the U.S. economy, both from a Customs standpoint and from a trade balance standpoint.

Second, they are not for speculation. We have needs right now, and we need to be responding to the commercial needs of the incoming cargo for the ports.

And three, this year will be the end result of 26 years of Federal studies that have been going on in the Port of Long Beach, and we expect with the fiscal year 1991 funding to finally establish a firm Federal interest so there is no question as to what the level of Federal interest is for the Ports of Long Beach and Los Angeles Development Plan.

It's for these reasons and the ones mentioned by Congressman Anderson that we solicit our action.

Thank you for this opportunity. I appreciate your attention.

[The statement of E. D. Allen follows:]

TESTIMONY OF E. D. ALLEN
CHIEF HARBOR ENGINEER FOR THE PORT OF LONG BEACH
ON BEHALF OF THE
LONG BEACH BOARD OF HARBOR COMMISSIONERS
BEFORE
CONGRESSIONAL ENERGY AND WATER DEVELOPMENT SUBCOMMITTEES
WASHINGTON D. C.
April 4, 1990

I am E. D. Allen, Chief Harbor Engineer for the Port of Long Beach, California. I have been authorized by the Board of Harbor Commissioners of the City of Long Beach to represent the Port of Long Beach in regard to appropriations for the Los Angeles-Long Beach Harbors Navigation Study, the Los Angeles and Long Beach Harbors Model Study programs.

The Ports of Long Beach and Los Angeles, in cooperation with the Corps of Engineers, have developed a long-range master plan, referred to as the 2020 Plan, which demonstrates the need for new navigation channels and additional landfill development. This document is a product of the Los Angeles-Long Beach Harbors Navigation Study for future channels and landfill development, which has been in process since 1964 by the U. S. Army Corps of Engineers. The Water Resources Development Act of 1986 authorizes construction of this master plan project upon completion of a favorable Chief's Report. The first step in this process is a feasibility report, which is nearing completion. The Ports and the Corps will complete the feasibility study with a Chief of Engineers Report and initiate planning, engineering and design (PED) in fiscal year 1991, including physical and numerical model testing and other studies needed for the permitting process. It is, therefore, urged that the Committee approve an appropriation of $3,250,000 for fiscal year 1991 to complete the feasibility study and to initiate PED.

The Port of Long Beach has started the first phase of the 2020 Plan with construction of its Pier J expansion project, which includes dredging the Long Beach Main Channel to at least a -76' depth. This increment of dredging is being evaluated for Federal interest in the feasibility study because it permits deeper draft crude petroleum vessels to call at the Port of Long Beach. The Water Resources Development Act of 1988 authorized consideration of credit for any work constructed by the non-Federal interest that is associated with such a project which is later recommended by the Chief of Engineers and approved by the Secretary. Therefore, if it is determined that the dredging of Long Beach Main Channel is part of the recommended Federal project, Congress is respectfully urged to credit the Port of Long Beach an amount equal to the Federal share of the cost for such work. The Federal share is estimated at $32,800,000, or 16% of the overall Pier J expansion project cost.

The Water Resources Development Act of 1976, Section 123, authorized the Chief of Engineers to operate and maintain the Los Angeles-Long Beach Harbor Hydraulic Model at the U. S. Army Corps of Engineers Waterways Experiment Station in Vicksburg, Mississippi as part of the Los Angeles and Long Beach Harbors Model Study. In the President's budget for fiscal year 1990, $930,000 was included and the funds have been appropriated to upgrade that model, including accumulating data on tidal circulation, wave energy, and ship motion in the San Pedro Bay area. This model study is essential to satisfy regulatory agency requirements and to plan and engineer the expansion of the port complex and associated navigation channels, as detailed in the Port's 2020 Plan. Also, continuation of the wave data acquisition is essential to accurately estimate the frequency of extreme wave energy events. These modeling improvements provide for state of the art capabilities that can be used on many harbor complexes. The Port, as the local agency, is agreeing to assist in this effort by providing necessary support personnel and equipment for the maintenance of the system. The Corps of Engineers advises that this study must be funded for consecutive years if useful results are to be obtained. Fiscal year 1991 would be the final effort in the five-year program. Therefore, Congress is respectfully requested to appropriate $760,000 for fiscal year 1991 to continue this modeling study.

Attached hereto is Resolution No. HD-1494, adopted by the Board of Harbor Commissioners of the City of Long Beach on March 12, 1990, which contains data relating to the background of the Los Angeles-Long Beach Harbors Navigation Study, hydraulic modeling, and other related matters. The resolution stresses the need for federal assistance in developing economic, technical and environmental background information essential to the design and permitting of Port facilities vital to regional and national interests.

Agencies benefiting from these projects in San Pedro Bay include, but are not limited to, the City of Long Beach, the Ports of Long Beach and Los Angeles, the County of Los Angeles, the State of California, the United States Navy and Coast Guard, the United States Customs Service, and various state and federal environmental agencies.

Through the years, the Port of Long Beach and the U. S. Army Corps of Engineers have worked closely in bringing into reality the 2020 Plan with the completion of the Los Angeles-Long Beach Harbor feasibility study and enhancement of the model. We believe these projects are vital to the development of our nation's water resources. We kindly ask that Congress continue to support these projects in fiscal year 1991 by appropriating the requested funds.

Thank you for permitting me the privilege of this presentation.

E. D. Allen

E. D. Allen
Chief Harbor Engineer

1990

RESOLUTION NO. HD-1494

A RESOLUTION OF THE BOARD OF HARBOR COMMISSIONERS OF THE CITY OF LONG BEACH, CALIFORNIA, REQUESTING THE CONGRESS OF THE UNITED STATES TO APPROPRIATE FUNDS TO CONTINUE THE LOS ANGELES-LONG BEACH HARBORS NAVIGATION STUDY AND THE LOS ANGELES AND LONG BEACH HARBORS MODEL STUDY PROGRAMS, BOTH RELATING TO IMPROVEMENTS IN SAN PEDRO BAY AND CONDUCTED BY THE UNITED STATES ARMY CORPS OF ENGINEERS, AND MAKING A DETERMINATION RELATING THERETO.

WHEREAS, the Ports of Long Beach and Los Angeles in San Pedro Bay, California, are two of a limited number of sites on the West Coast of the United States which possess the potential for deep water ports as recommended in the West Coast Deep Water Port Facility Study conducted by the United States Army Corps of Engineers; and

WHEREAS, the Ports of Long Beach and Los Angeles have a record of both physical and fiscal growth to the extent that together the two are presently handling over 135 million metric revenue tons of cargo annually (fiscal year 1989), which cargo is valued at over 95 billion dollars; and

WHEREAS, the growth and activity of the Ports of Long Beach and Los Angeles have a significant regional and national economic effect; and

John R. Calhoun
City Attorney of Long Beach
333 West Ocean Boulevard
Long Beach, California 90802
Telephone (213) 590-6061

WHEREAS, in excess of 2.8 billion dollars in federal revenues were collected as United States Customs duties on foreign imports passing through the Ports of Long Beach and Los Angeles during the fiscal year ending September 30, 1989; and

WHEREAS, both Ports are now, and are increasingly becoming, hard-pressed to provide facilities to meet the needs of the shipping industry, and to that end are conducting extensive studies, in conjunction with federal studies, to determine navigational, transportation, and environmental requirements necessary to provide economic and adequate surge-free berthing and cargo handling facilities; and

WHEREAS, all existing land in the Port of Long Beach which can be developed for shipping operations has been utilized and to meet the needs of the following decade, the design, permitting and construction of new lands must continue; and

WHEREAS, continuation of the studies currently underway by the United States Army Corps of Engineers, consisting of the Los Angeles-Long Beach Harbors Study originally requested by the Committees on Public Works of both the House and the Senate, and the Los Angeles and Long Beach Harbors Model Study programs, including maintenance and operation of the San Pedro Bay Hydraulic Model at Vicksburg, Mississippi, as authorized by Section 123 of the Water Resources Development Act of 1976, is urgently needed for use in the design and permitting processes for future landfills for Port Development; and

WHEREAS, it is necessary, as part of the Los Angeles and Long Beach Harbors Model Study programs, to upgrade existing hydraulic models to assure adequate water quality and surge-free berthing, which includes obtaining long-term data on the hydraulic regime in San Pedro Bay by conducting a model enhancement program using self-contained recording instruments to determine currents and energy entering the Bay; and

WHEREAS, the Board of Harbor Commissioners of the City of Long Beach, as a properly constituted and financially responsible local agency, by its Resolution No. HD-890, adopted August 3, 1965, expressed its intent to enter into such agreements as may be reasonably required to further federal projects for the development and improvement of Long Beach and Los Angeles Harbors; and

NOW THEREFORE, the Board of Harbor Commissioners of the City of Long Beach resolves as follows:

Section 1. That the Congress of the United States be, and is hereby, respectfully requested to appropriate simultaneously the funds necessary for the Chief of Engineers, United States Army Corps of Engineers, to continue the Los Angeles-Long Beach Harbors Navigation Study.

Sec. 2. That the Congress of the United States be, and is hereby, respectfully requested to appropriate simultaneously the funds necessary for the Chief of Engineers, United States Army Corps of Engineers, to maintain the San Pedro Bay Hydraulic Model at the Waterways Experiment Station at Vicksburg, Mississippi, as part of the Los Angeles and Long Beach Harbors Model Study programs.

Sec. 3. That the Congress of the United States be, and is hereby, respectfully requested to appropriate simultaneously the funds necessary for the Chief of Engineers, United States Army Corps of Engineers, to continue the model enhancement program of San Pedro Bay to obtain prototype wave data and develop improved water quality and ship motion models, essential to long-range planning and design, also as part of the Los Angeles and Long Beach Harbors Model Study programs.

Sec. 4. That the Acting Executive Director of the Long Beach Harbor Department be, and he is hereby, directed to send copies of this resolution to the United States Senators and to Members of the House of Representatives from California, with a letter requesting their assistance in presenting this resolution before the proper Congressional committees.

Sec. 6. That the Acting Executive Director of the Long Beach Harbor Department be, and he is hereby, further directed to send copies of this resolution to the President of the United States; the Director, Office of Management and Budget; the Secretary of the Army; the Chief of Engineers, the Board of Engineers for Rivers and Harbors, the Division Engineer-South Pacific Division and the District Engineer-Los Angeles, all of the United States Army Corps of Engineers; and to such other interested persons as he may deem appropriate.

The Secretary of the Board shall certify to the passage of this resolution by the Board of Harbor Commissioners of the City of Long Beach, shall cause the same to be posted in three (3) conspicuous places in the City of Long Beach, and shall cause a certified copy of this resolution to be filed forthwith with the City Clerk of the City of Long Beach and it shall thereupon take effect.

I hereby certify that the foregoing resolution was adopted by the Board of Harbor Commissioners of the City of Long Beach at its meeting of March 12, 1990 by the following vote:

Ayes:	Commissioners	Hauser, Friedland, Langslet, DuVall
Noes:	Commissioners	None
Absent:	Commissioners	Talin
Not Voting:	Commissioners	None

Secretary

RLL:mm
3/2/90
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Mr. **Langner**. Next we have representative of the sister or brother, I don't know which it is, the Port of Los Angeles, our new Treasurer of C-MANC, Vern Hall.

Mr. **Hall**. Mr. Chairman, Members of the committee, thank you again for the honor of being here. I have with me a large contingency, but they are all over at the APA Convention which, of course, you are aware of.

I do have my counterpart in construction, Bruce Seaton, and a member of our Commission staff, Ms. Carol Carevich.

Again, we do work very closely with the district office and our sister port in Long Beach, and we are very confident that with continued Federal funding, we will indeed complete the ongoing feasibility study this fiscal year.

And we are looking forward to that definition of Federal interests, and, of course, we need to continue the wrap-up of that five-year program in Vicksburg for the model study which supports both the environmental and feasibility study.

And to that end, we are also asking for PE&D money this year to start the design process of $3 million.

Final point I would just like to confirm what Dan mentioned is that I know it's not a direct relationship, but the Port of Los Angeles has become the Nation's largest and most successful port just this last year, and much of that is due to the previous Federal channel deepening project.

We intend to be competitive and continue that growth into the future. Last fiscal year as an example, it was the largest Custom district in the United States. Some $2.8 billion was collected through Custom revenues. So we think it's a good investment, and we again thank you for your continued support.

[The statement of Vernon E. Hall follows:]

TESTIMONY SUBMITTED BY

VERNON E. HALL, CHIEF HARBOR ENGINEER

on behalf of the

CITY OF LOS ANGELES
BOARD OF HARBOR COMMISSIONERS

(WORLDPORT LA)

before the

CONGRESSIONAL, ENERGY AND WATER DEVELOPMENT APPROPRIATIONS COMMITTEES

on the

FY 1991 U.S. ARMY CORPS OF ENGINEERS BUDGET PROPOSAL

APRIL 4, 1990

***

Mr. Chairman and Members of the Subcommittee:

My testimony today, on behalf of the Port of Los Angeles, supports the continuation of the federal fiscal role in the implementation of a major navigation improvement and port development program for the San Pedro Bay. The program, known as the 2020 Program, was jointly undertaken by the Ports of Los Angeles and Long Beach and the U.S. Army Corps of Engineers as first authorized by Congressional resolution in the 90th Congress. This farsighted action accurately anticipated the phenomenal growth of the San Pedro Bay ports which are today ranked as the second largest containerized port complex in the world. The Port of Los Angeles, alone, has recently achieved the status of number one container port in the United States.

The 2020 Plan outlines the improvements and expansion that will be required for the ports to keep pace with the projected increase in world commerce into the 21st century. Implementation of the initial phase of the 2020 Plan is authorized in Section 201(b) of the Omnibus Water Resources Development Acto 1986 (P.L. 99-662) and further sanctioned in Section 104 of the Water Resources Development Act of 1988 (P.L. 100-371).

Success of the program is dependent on the continued federal support of two essential and on-going studies. The first study, referred to as the Los Angeles-Long Beach Harbor Model Study, is a tidal and harbor resonance study of the San Pedro Bay being conducted by the Corps of Engineers at its Waterways Experiment Station in Vicksburg, Mississippi. We are currently in the fourth year of this five-year study effort. The second study is the Feasibility Study for Phase I of the 2020 Plan, which will be completed by the Los Angeles District of the Corps of Engineers in early FY91.

The Harbor Model Study is a long-term harbor response, ship motion and tidal circulation study, designed to collect data for the evaluation of the ports' responses to the environmental changes in the harbors created by the channel deepening and land reconfigurations as called for in the 2020 Program. Changes in tidal circulation and harbor channel flushing must also be examined to determine the possible effects that channel deepening and landfill expansion will have on water quality in both ports and the surrounding vicinity.

A portion of the Harbor Model Study funds that have already been appropriated will be expended on the physical model itself. The upgrade of the physical model is necessary to insure that the numerical analyses are validated and that they reflect state-of-the-art modeling techniques and will produce the most accurate study data possible.

As regards next year's funding for the Harbor Model Study, the Corps of Engineers' FY91 budget request includes $760,000 in operation and maintenance (O&M) funds for its continuation. This proposed amount will be sufficient to keep the study on schedule as outlined in the three-party Memorandum of Understanding (MOU) that was entered into on June 26, 1987 by the Ports of Los Angeles and Long Beach and the Corps of Engineers. The requested amount is also consistent with the $930,000 that was appropriated in the FY90 Budget, which is expected to be fully expended this year. The FY90 Budget appropriation continues to be expended on wave data collection, prototype and physical model validations of numerical models on harbor circulation and water quality as well as harbor resonance.

The Feasibility Study, to be completed in FY91, needs an additional and final appropriation of $250,000. The study evaluates and quantifies the national transportation cost savings of the channel deepening projects which must also meet strict engineering and environmental tests before they can be approved.

We are confident that the study will be approved by the Chief of Engineers, and that we will soon begin the planning, engineering and design (PE & D) segment of Phase I in FY91, while the Harbor Model Study continues to provide essential design data and parameters. We, therefore, strongly urge that your Subcommittee include $3,000,000 for that purpose in your Appropriations Bill for FY91. This money will be primarily used for geotechnical investigations, engineering analyses and cost estimates.

In the spirit of partnership, as evidenced in the MOU and in the interest of our meeting the regional and national shipping demands that are outlined in the 2020 Program, the Port of Los Angeles respectfully requests that your Subcommittee appropriate the full $760,000 that is contained in the Corps' FY91 Budget Request, and that you include an additional $3,250,000 for completion of the Feasibility Study and the commencement of the PE & D segment of Phase I of the 2020 Plan.

The Ports of Los Angeles and Long Beach have long valued the vision of this Subcommittee in appropriating scarce federal resources to harbor and navigation projects such as ours. We view this commitment to the expansion of water-borne transportation as a demonstration by the federal government of its support for the nation-wide economic development in which the nation's port authorities play an important role.

It is not coincidence that the U.S. Customs revenue collections at the San Pedro Bay ports is the largest amount collected at any of the major U.S. ports. A total of $2.8 billion was collected in FY89, and this amount will certainly continue to grow in proportion to our ability to keep pace with the rapid increase in foreign trade that is projected for our region and the nation.

Thank you Mr. Chairman for allowing me to testify and to inform you of the progress we are making toward the goals that we have identified.

VEH:lat
13904adm.mc

Mr. LANGNER. The Port of Oakland is represented by Jerry Pope, Director of Trade Relations and Former Chairman of C–MANC.

Mr. POPE. Congressman Bevill and Congressman Fazio and Members of the committee, once again I want to express my appreciation for the help that you have given us over the years and for the continued support that you have given the Port of Oakland.

I would like to briefly mention that we have a new chief executive officer, Nolan R. Gimpel, who is going to be setting new direction for our port.

And I also have with me here in the audience John Glubber, who is Director of C–MANC for the Port of Oakland.

We particularly appreciate the continued appropriations, and I do want to call special attention to the recommendation that has been made by C–MANC for $5.47 million appropriation for continuation of the LTMS Study that we hope will lead to solution of designating sites for dredge sediment disposal.

Thank you very much for hearing me today.

[The statement of the Port of Oakland follows:]

PORT OF OAKLAND

BOARD OF PORT COMMISSIONERS
CITY OF OAKLAND

RONALD W. BRADY
President

CAROLE WARD ALLEN
Vice President
DOUGLAS J. HIGGINS
Commissioner
JAMES B. LOCKHART
Commissioner
CELSO D. ORTIZ
Commissioner
THOMAS J. SWEENEY
Commissioner
R. ZACHARY WASSERMAN
Commissioner

NOLAN R. GIMPEL
Chief Executive Officer

JAMES J. O'BRIEN
Executive Director, Transportation Services

EILEEN M. DALY
Executive Director, Port Planning and Development

April 4, 1990

Representative Tom Bevill, Chairman
and Members of the House Subcommittee
on Energy and Water Development

Dear Congressman Bevill and Members of the Committee:

I appreciate the opportunity of submitting written testimony on behalf of the Port of Oakland in support of appropriations that are under consideration by the House Subcommittee on Energy and Water Development. The appropriations as recommended in the President's Budget will provide $4.4 million for continuing construction of the Oakland Inner and Outer Harbor channels and will also provide $2.09 million for annual operations and maintenance. An appropriation of $5.47 million to complete the Corps dredge disposal study for San Francisco Bay has been recommended by California Marine Affairs and Navigations Conference (CMANC) and we request your support of that recommendation.

We appreciate past actions that have been taken by you and the House Subcommittee with respect to ongoing appropriations that have now brought us to the point of where actual construction will begin on the Oakland channel deepening projects and would ask that this written material be incorporated as a part of the hearing record. Thank you for your consideration.

Sincerely,

NGimpel

Nolan R. Gimpel
Chief Executive Officer

OFFSET
CAMERA COPY

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Telephone (415) 272-1100 ■ Fax 272-1172 ■ Telex 336-334 ■ Cable address, PORTOFOAK, Oakland

PORT OF OAKLAND

BOARD OF PORT COMMISSIONERS
CITY OF OAKLAND

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Commissioner
R. ZACHARY WASSERMAN
Commissioner

NOLAN R. GIMPEL
Chief Executive Officer

JAMES J. O'BRIEN
Executive Director, Transportation Services

EILEEN M. DALY
Executive Director, Port Planning and Development

Testimony by the Port of Oakland

Before the House Subcommittee on
Energy and Water Development

April 4, 1990
Washington, D.C.

BY NOLAN R. GIMPEL, CHIEF EXECUTIVE OFFICER

530 Water Street ■ Jack London's Waterfront ■ P.O. Box 2064 ■ Oakland, California 94604-2064
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Representative Tom Bevill, Chairman
and Members of the House Committee

I want to thank you for the opportunity of submitting written testimony in support of appropriations that are under consideration by the Senate Subcommittee on Energy and Water Development. These appropriations as recommended in the President's budget provide $4.4 million for continuing construction in the Oakland Inner and Outer Harbor channels and also provide $2.09 million for annual operation and maintenance related to Oakland harbor channels. We particularly appreciate past actions that have been taken by you and the House committee with respect to ongoing appropriations that have now brought us to the point where actual construction of the Oakland channel deepening can commence.

The Oakland Inner and Outer Harbor channel improvements are a federally authorized project undertaken by the U.S. Army Corps of Engineers. The project was authorized for construction by the Water Resources Development Act of 1986, 99th Congress, Second Session, as a part of Public Law 99-662.

The project will deepen both channels to -42 feet below mean lower low water (MLLW) and provides additional navigational improvements. Approximately 7 million cubic yards of material must be dredged to provide the necessary channel improvements.

The Corps estimates the benefits of the project to the economy of the United States will be approximately $6.5 million annually. Benefits of the project are derived from:

A. The use of larger vessels with lower operation cost and lower fuel consumption per ton of cargo carried.

B. Elimination or reduction of tidal delays.

C. Improvement in navigation vessel safety and reduction in possibility of collisions or groundings.

The Port of Oakland as the local cooperating agency for the channel improvements is fully committed to meet its financial obligations as required under the Water Resources Act of 1986 with the balance of the project cost to be funded from federal appropriations.

In order to satisfy the requirements of our shipping lines, a decision was made to accelerate construction of the first phase of the Inner Harbor part of the project. On the 28th of April, 1988, the Port of Oakland entered into an agreement with the Secretary of the Army under Section 215 of Public Law 90-483 (Section 215, Agreements) to receive credit towards reimbursement obligations for the cost of work accomplished by the Port in -

deepening the Inner Harbor channel to -38 feet MLLW and providing for an 1,100 foot ship turning circle. Approximately 500,000 cubic yards of material is planned to be dredged in this first phase. Construction was started in May of 1988, but was soon stopped by a State court order which prevented disposal of the material at a designated ocean site. The Port is investigating alternative disposal sites for approximately 440,000 cubic yards of this material. We expect to be under construction on this phase of the project by late 1990.

The Corps of Engineers is also proceeding with further study and selection of sites for disposal of dredged material from the final phases of construction of the project. The current schedule calls for the Oakland channel project as described in its authorization to be completed by July, 1994.

With regard to this investigation of CMANC recommendation has been made for an appropriation of $5.47 million to complete the study and I respectfully request your support of this recommendation.

The appropriations under consideration today will permit the Corps of Engineers to complete necessary studies concerning the project. These studies will include investigations into a suitable disposal site, or sites, to receive 6.5 million cubic yards of dredge material and will also update other necessary Corps, engineering and economic studies and environmental studies leading to preparation of a Supplemental EIS for the project, prior to the commencement of final phases of construction.

As I have earlier stated, we appreciate the cooperation of this committee and urge your approval of the appropriations requests as submitted.

Mr. LANGNER. Al Krygsman, Former Chairman of C-MANC.

Mr. KRYGSMAN. Mr. Chairman and Congressman Fazio and Members of the committee, I wish to introduce my written statement for the record.

I also wish to introduce two of our Commissioners who are with me here today, Mr. Oscar Kleinfeld and Mr. Phil Wallace, sitting in the front row here.

And I want to point out again that I bought a colorful publication for you, and John Sulpizio accuses me of bringing that just because my picture is in it.

That, of course, is not true.

Mr. LANGNER. How many times now?

Mr. KRYGSMAN. Just for your information, my picture is on Page 10.

Mr. BEVILL. We are always glad to get that beautiful magazine.

Mr. FAZIO. It's not a full page, Alex.

Mr. BLECHA. Just so my Commissioners don't beat me up on the way back home, their pictures are on Pages 8 and 9.

Mr. KRYGSMAN. I do wish to point out on Page 22 you will see a statistic for the port just above the beautiful picture of the Port of Stockton. It looks like it's in Alaska. It really isn't. That is Mount Diablo that had snow on it this winter, and it actually was there.

Some of you have been in the port. All of you have been in the port, I know, may think that there wasn't any mountain there, and it's kind of flat, but this is a real picture taken from I-5 highway, I-5 this winter when there was snow on Mountain Diablo.

The statistics show you clearly that after our dredging was completed in 1982, tonnage went up drastically from three million tons to four million tons, so I just want to thank you for your past support and funding, and I want to point out to you, not just thank you, that it actually works.

Another thing I do want to point out is that now the Administration is starting to request local cost-sharing for maintenance as well.

They don't call it cost-sharing. They call it participation, but I think cost-sharing by another name is still cost-sharing, and the problem that we are having with that, and we have discussed this before, is the problem of the ports and the capability of the ports of charging user fees and actually collecting it to defray these local cost-sharing funds.

There is some past GMC decisions that seem to allow us to charge those user charges, and I am, in fact, charging them. But I am doing very poorly in collecting them.

So I think that we need clear legislation that authorizes the local sponsors to pass on these local costs which are going to get larger and larger to the end users without having to go out to collect because some several of my customers are users of my channel, telling me that that is fine, I like your bills, but sue us.

And, of course, the cost of litigation would far exceed the cost of very low amount that I am billing them.

So we do need in the next legislation, we do need clear authority for the ports and other local agencies to pass on those fees and not have to go to court to collect them.

Thank you, Mr. Chairman.

[The statement of Alexander Krygsman follows:]

Port of Stockton
General Offices: P.O. Box 2089, Stockton, CA 95201-2089
(209) 946-0246 / FAX (209) 465-7244 / TELEX 35-9467

CONGRESS OF THE UNITED STATES

UNITED STATES HOUSE OF REPRESENTATIVES

COMMITTEE ON APPROPRIATIONS

SUBCOMMITTEE ON
ENERGY AND WATER DEVELOPMENT

STATEMENT BEFORE THE ENERGY AND WATER DEVELOPMENT APPROPRIATIONS
SUB-COMMITTEE OF THE UNITED STATES HOUSE OF REPRESENTATIVES
APPROPRIATIONS COMMITTEE

BEFORE THE HONORABLE TOM BEVILL, CHAIRMAN
AND MEMBERS OF THE COMMITTEE

Mr. Chairman:

I am Alexander Krygsman, Port Director of the Port of Stockton in Stockton, California.

The San Francisco Bay to Stockton Ship Channels Project is an authorized project, presently under construction.

The Port of Stockton is primarily a bulk port that serves industry and agriculture in the San Joaquin Valley in California, and the bulk imports and exports of the Western States, including the coal areas of these States.

The Port of Stockton recognized as far back as 1952 that deeper channels would be needed for the movements of bulk cargoes and requested the Corps of Engineers to deepen the channel in 1952. Coal, grain, fertilizers and many other bulk materials require deeper channels to serve the larger bulk carriers.

The Nation needs ports that can handle larger, more economical and more fuel-efficient vessels close to the production areas, both agricultural and industrial, to conserve energy.

OFFSET
CAMERA COPY

GENERAL OFFICE: 2201 W. WASHINGTON ST., STOCKTON, SAN JOAQUIN COUNTY, CALIFORNIA

Continued
Page 2 of 2

The Port of Stockton is such a port.

The dredging of the Stockton channel portion has been completed. We have provided with this Statement, for your information, a copy of the Port of Stockton's most recent annual report showing substantial increases in cargo since the dredging of the Stockton channel was completed. The project, as far as it is completed, is certainly paying off.

We urge you to appropriate the same amount as contained in the proposed President's budget to continue the balance of the Project. We also strongly urge that adequate funding be appropriated to maintain the channels so that the benefits may continue to accrue.

I wish to state again, for the record, that the Port of Stockton is in support of deepening the Sacramento channel.

Respectfully yours,

Alexander Krygsman
Director, Port of Stockton
Stockton, California

AK/yri

Attachment

4/90

Mr. **Langner**. Thank you, Alex.

Appearing for the first time before you is John Sulpizio, Port Director of the Port of Sacramento.

Mr. **Sulpizio**. Mr. Chairman and Members of the committee, thank you for the opportunity to testify. I would like to first of all note that the Port of Sacramento has an ongoing project, channel deepening project of its navigation channel from 30 to 35 feet.

We want to express particular appreciation for our local advocate, the Honorable Vic Fazio, who has been a great help to us and certainly support the President's recommendations for continued funding.

I would like to know two additional and specific points with regard to the execution of our project that poses some challenge to us and on which we ask for some help.

The first is an issue of utility relocation. As you are probably aware, the responsibility for utility relocations were shifted to the local non-Federal sponsor, in this case, the Port of Sacramento.

As this is not a deep dredge, i.e. over 45 feet, there is no specific guidance, if you will, with regard to how this is treated. It's just simply stipulated that it's the responsibility of the Port of Sacramento or the non-Federal partner.

What we are seeking is some relief with regard to the enforcement of permit sections under Section 10, such that the Corps can join with us to enforce earlier permits for the location of those utilities.

And accordingly, we will request that the subcommittee instruct the Corps that authority is inadequate and the foreign forced existing permit conditions under the Rivers and Harbors Act, Section 10 permits, in which utilities have consented to undertake necessary relocations.

That would, of course, shift the responsibility, the financial responsibility to the utilities and remove it, if you will, from our partnership as public agencies.

Secondly, we are looking at the possibility of using Section 916 of the Act, to pre-fund, if you will, the project. Section 916 authorizes a repayment district, and what we respectfully ask is that the subcommittee direct the Assistant Secretary of the Army to review this provision for its applicability to navigation projects.

I think originally intended was its use perhaps either on a fluid project or a non-navigation project. In this case, we see it as a nice partner mechanism, if you will, to California's assessment process, particularly as applied to ports.

And if we could find in our partnership the opportunity to implement 916 to pre-fund with Federal dollars and then pull back, if you will, with local assessment mechanisms, we think this project could be run very smoothly and successfully to its completion.

Thank you.

[The statement of John Sulpizio follows:]

STATEMENT
OF
JOHN SULPIZIO, ACTING DIRECTOR
PORT OF SACRAMENTO
AT A HEARING ON
FISCAL YEAR 1991 ENERGY AND WATER APPROPRIATIONS
BEFORE
THE SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
COMMITTEE ON APPROPRIATIONS
U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, D.C.

WEDNESDAY, APRIL 4, 1990

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE,

I AM JOHN SULPIZIO, ACTING DIRECTOR OF THE PORT OF SACRAMENTO. I APPEAR ON BEHALF OF THE SACRAMENTO-YOLO PORT DISTRICT ESTABLISHED BY SPECIAL ACT OF THE CALIFORNIA LEGISLATURE THROUGH ITS APPOINTED COMMISSION. THE DISTRICT IS THE LOCAL SPONSOR OF THE SACRAMENTO RIVER DEEP WATER SHIP CHANNEL NAVIGATION PROJECT AUTHORIZED IN THE WATER RESOURCES DEVELOPMENT ACT OF 1986 (PUBLIC LAW 99-662). I AM ACCOMPANIED BY LAWRENCE G. MALLON, A CALIFORNIA ATTORNEY AND SPECIAL COUNSEL TO THE PORT.

THE PORT COMMISSION RECOGNIZES AND EXPRESSES ITS

GRATITUDE TO OUR LOCAL CONGRESSMAN, THE HONORABLE VIC FAZIO, AND TO YOU, MR. CHAIRMAN AND THE OTHER MEMBERS OF THIS SUBCOMMITTEE AND STAFF FOR THEIR CONTINUING EFFORTS IN FUNDING THIS NAVIGATION PROJECT OF CRITICAL IMPORTANCE TO THE FUTURE DEVELOPMENT OF THE PORT OF SACRAMENTO.

THE COMMISSION SUPPORTS THE PRESIDENT'S BUDGET REQUEST WHICH CONTAINS $3,900,000 TO FUND THE THIRD IN A FIVE YEAR $45 MILLION CONSTRUCTION PROJECT --NOW IN IT SECOND YEAR-- TO DEEPEN THE 46.5 MILE MAN-MADE CHANNEL UPRIVER FROM SAN FRANCISCO BAY COMPLETED IN 1963 FROM THIRTY TO THIRTY-FIVE FEET IN DEPTH.

TIMELY COMPLETION OF THE CURRENT PROJECT IS NECESSARY IN ORDER TO:

FIRST, SERVE OUR EXISTING CUSTOMER BASE;

SECOND, EXPAND PORT CAPACITY TO SERVE A RAPIDLY GROWING REGIONAL ECONOMY; AND

THIRD, IMPROVE CHANNEL DEPTH CAPACITY TO ACCOMMODATE SEVENTY PER CENT OF THE WORLD BULK FLEET FROM TWENTY PER CENT CURRENTLY.

UNDER THE 1986 ACT THE PORT OF SACRAMENTO IS REQUIRED TO CONTRIBUTE 25% OF THE COST OF THE GENERAL NAVIGATION FEATURES OF THE PROJECT, DREDGED MATERIAL DISPOSAL AREAS, AND IS RESPONSIBLE FOR THE TIMELY COMPLETION OF NECESSARY UTILITY RELOCATIONS. I MIGHT NOTE THAT UNLIKE SOME PORT

PROJECTS, OUR PROJECT INVOLVES DISPOSAL OF DREDGED MATERIAL ON SITE AND HAS NOT BEEN DELAYED FOR ENVIRONMENTAL REASONS.

WE HAVE MET OUR FINANCIAL RESPONSIBILITY TO DATE WITH A COMBINATION OF NET RETAINED EARNINGS AND BORROWING AGAINST CAPITAL ASSETS. TO FURTHER SECURE OUR FISCAL POSITION IN THE PROJECT, WE HAVE ALSO PLEDGED PORT LAND AS COLLATERAL. CLEARLY WE WOULD NOT WANT TO LOSE THE COLLATERALIZED ASSETS WITHOUT EXHAUSTING OTHER AVAILABLE ALTERNATIVES.

I BRING TWO ANCILLARY ISSUES TO THE SUBCOMMITTEE'S ATTENTION AND REQUEST THE SUBCOMMITTEE CONSIDER INCLUDING IN THE APPROPRIATIONS BILL EITHER A DIRECTIVE TO THE ASSISTANT SECRETARY OF THE ARMY FOR CIVIL WORKS, OR APPROPRIATE REPORT LANGUAGE, AS THE SUBCOMMITTEE CONSIDERS APPROPRIATE IN EACH INSTANCE.

UTILITY RELOCATIONS

FIRST, SECTION 101(a)(4) OF THE 1986 ACT REQUIRES A NON-FEDERAL INTEREST TO PERFORM OR ASSURE THE PERFORMANCE OF ALL RELOCATIONS OF UTILITIES NECESSARY TO CARRY OUT THE PROJECT, EXCEPT THAT IN THE CASE OF A DEEP-DRAFT HARBOR AND IN THE CASE OF A PROJECT CONSTRUCTED BY NON-FEDERAL INTERESTS UNDER SECTION 204, ONE HALF OF THE COST SHALL BE BORNE BY THE OWNER OF THE FACILITY BEING RELOCATED AND ONE HALF OF THE COST OF EACH SUCH RELOCATION SHALL BE BORNE BY THE NON-FEDERAL INTERESTS.

THE HOUSE-SENATE CONFERENCE REPORT ON THE LEGISLATION AT PAGE 205 GOES ON TO STATE THAT EXCEPT AS PROVIDED IN SECTION 204, THIS SECTION IS NOT INTENDED TO PLACE ANY NEW OBLIGATION ON NON-FEDERAL INTERESTS TO PAY FOR RELOCATIONS NECESSITATED BY COMMERCIAL CHANNEL OR HARBOR DEVELOPMENT INVOLVING DEPTHS OF FORTY-FIVE FEET OR LESS. THE CONFERENCE REPORT MAKES FURTHER PERMISSIVE REFERENCE IN STATING IF THE NON-FEDERAL INTEREST HAS THE AUTHORITY TO COMPEL THE OWNER OF THE FACILITY TO PAY RELOCATION COSTS, IT MAY DO SO.

WE SUBMIT CONGRESS ASSUMED THE EXISTENCE OF ADEQUATE AUTHORITY UNDER STATE LAW TO ENFORCE NECESSARY RELOCATIONS. ADEQUATE AUTHORITY FOR THIS PURPOSE DOES NOT EXIST IN CALIFORNIA.

THE SACRAMENTO RIVER PROJECT INVOLVES SEVERAL PUBLIC AND PRIVATE UTILITY RELOCATIONS AT A CURRENTLY ESTIMATED RELOCATION COST OF APPROXIMATELY EIGHT MILLION DOLLARS. WE ARE NOW AT A POINT IN THE CONSTRUCTION SCHEDULE THAT THE PLANNING, ENGINEERING, AND SCHEDULING OF UTILITY RELOCATIONS SHOULD COMMENCE BUT TO DATE THIS HAS BEEN DELAYED AND OVERSHADOWED BY THE ISSUE OF FINANCING THE NECESSARY RELOCATIONS.

IN AN ATTEMPT TO RESOLVE THIS MATTER WITHOUT SEEKING CORPS INTERVENTION WE HAVE RESEARCHED APPLICABLE CALIFORNIA AND FEDERAL LAW FOR THE EXISTENCE OF ENFORCEMENT AUTHORITY

AND APPLICABLE LEGAL PRECEDENT. OUR RESEARCH HAS LED US FULL CIRCLE TO THE NECESSITY TO INVOKE PRE-1986 LAW AND PRACTICE IN THE ENFORCEMENT OF EXISTING PERMIT CONDITIONS UNDER RIVERS AND HARBORS ACT SECTION 10 PERMITS IN WHICH UTILITIES HAVE CONSENTED TO UNDERTAKE NECESSARY RELOCATIONS IN THE INTERESTS OF NAVIGATION WHEN REQUESTED BY THE CORPS AT THEIR OWN EXPENSE.

THE PRE-1986 PRACTICE ENTAILED CORPS ENFORCEMENT OF WHAT ARE CALLED RESERVATIONS OF THE RIGHT TO COMPEL REMOVAL OR RELOCATION OF UTILITIES INCORPORATED AS PERMIT CONDITIONS CONTAINED IN PERMITS ISSUED BY THE CORPS OF ENGINEERS UNDER SECTION 10 RIVERS AND HARBORS ACT OF 1899 AT THE TIME OF DREDGING AND INSTALLATION OF THE UTILITY CROSSING. THIS RESERVATION IS THE EMBODIMENT OF THE PARAMOUNT FEDERAL NAVIGATIONAL SERVITUDE UNDER THE COMMERCE CLAUSE OF THE U.S. CONSTITUTION. IN FACT FEDERAL COURTS HAVE CONSISTENTLY HELD THAT FAILURE TO EXPRESSLY RESERVE THIS AUTHORITY CONSTITUTES A WAIVER OF THE NAVIGATIONAL SERVITUDE.

IN CALIFORNIA PUBLIC UTILITIES HAVE LONG SINCE NEGOTIATED STATEWIDE PERMITS WITH THE STATE LANDS COMMISSION WHICH ISSUES PERMITS UNDER ITS AUTHORITY OVER SUBMERGED LANDS THAT PURPORT TO EMBODY CONDITIONS INCLUDED IN CONCURRENT FEDERAL PERMITS. HOWEVER, ENFORCEMENT OF CONCURRENT STATE PERMIT CONDITIONS MUST NECESSARILY DEFER TO A CLASSIC APPLICATION OF THE DOCTRINE OF FEDERAL PREEMPTION.

WE HAVE CONFIRMED THAT FOR EACH UTILITY RELOCATION REQUIRED BY PROJECT CONSTRUCTION A SECTION 10 (33 U.S.C. 403) PERMIT ISSUED FOR UTILITY CROSSINGS OF NAVIGABLE WATERS INCORPORATES AS AN EXPRESS CONDITION AS FOLLOWS: " IF FUTURE OPERATIONS BY THE UNITED STATES REQUIRE AN ALTERATION IN THE POSITION OF THE STRUCTURE OR WORK.. OR IF IN THE OPINION OF THE SECRETARY OF THE ARMY, IT SHALL CAUSE UNREASONABLE OBSTRUCTION TO THE FREE NAVIGATION OF SAID (SIC) WATER, THE OWNER WILL BE REQUIRED UPON DUE NOTICE FROM THE SECRETARY OF THE ARMY, TO REMOVE OR ALTER THE STRUCTURAL WORK OR OBSTRUCTION CAUSED THEREBY WITHOUT EXPENSE TO THE UNITED STATES SO AS TO RENDER NAVIGATION REASONABLY FREE, EASY AND UNOBSTRUCTED;...".

WE HAVE DETERMINED THE APPROPRIATE WAY TO ENFORCE THESE RESERVATIONS IS IN THE FORM OF A SUIT AGAINST THE CORPS OF ENGINEERS UNDER 28 U.S.C. 1361, THE FEDERAL MANDAMUS STATUTE, TO COMPEL THE CORPS TO ENFORCE THEIR OWN PERMIT CONDITION. IN ADDITION, A SUIT TO ABATE AN OBSTRUCTION TO NAVIGATION UNDER SECTION 10 AND SEEKING AFFIRMATIVE MANDATORY RELIEF IN THE FORM OF AN INJUNCTION UNDER SECTION 12 (33 U.S.C. 406) MAY BE BROUGHT AGAINST THE UTILITY OWNER TO REMOVE OR ALTER THE UTILITY.

IT APPEARS THAT THE PROJECT SPONSOR HAS STANDING TO BRING SUCH AN ACTION AS ONE LIKELY TO SUFFER ACTUAL INJURY

TO NAVIGATION FROM THE OBSTRUCTION. IT ALSO APPEARS THAT UNLIKE OTHER SUITS FOR EQUITABLE RELIEF NO IRREPARABLE INJURY OR INADEQUATE REMEDY AT LAW MUST BE PROVEN IN ORDER FOR AN INJUNCTION TO ISSUE. FINALLY, AS AN ALTERNATIVE TO INJUNCTION A FEDERAL COURT MAY AWARD DAMAGES IN THE AMOUNT OF THE REMOVAL COSTS TO THE SPONSOR.

WE AT THE PORT, AS PARTNERS RATHER THAN ADVERSARIES IN THE CONSTRUCTION OF THIS AUTHORIZED NAVIGATION PROJECT, PREFER TO SETTLE OUR DIFFERENCES THROUGH ALTERNATIVE DISPUTE MECHANISMS SUCH AS THOSE MANDATED UNDER THE LOCAL COOPERATION AGREEMENT FOR THE PROJECT.

THE CORPS HAS RECOGNIZED AND TO SOME EXTENT HAS ANTICIPATED THIS PROBLEM BY PROVIDING IN A SERIES OF GUIDANCE LETTERS TO DISTRICT OFFICES AS FOLLOWS:

IN THOSE CASES WHERE THE LOCAL SPONSOR HAS, DESPITE EVERY REASONABLE EFFORT FAILED TO REACH AGREEMENT WITH AFFECTED UTILITY OWNERS REGARDING RELOCATIONS OR REMOVALS, AND FURTHER, LACKS THE AUTHORITY TO FORCE SUCH ACTIONS, THE FEDERAL GOVERNMENT MAY ELECT TO EXERCISE FEDERAL AUTHORITIES TO COMPEL THE RELOCATION OR REMOVAL, SUCH EXERCISE OF FEDERAL POWER SHALL NOT RELIEVE THE LOCAL SPONSOR OF ITS STATUTORY RESPONSIBILITY TO ASSURE THE RELOCATIONS OR THE ACQUISITION OF LANDS AND ITEMS TO BE REMOVED, AT NO EXPENSE TO THE FEDERAL GOVERNMENT.

CONSEQUENTLY, ANY FEDERAL EXPENSE INCURRED IN COMPELLING THE RELOCATION OR ACQUISITION WILL BE BORNE ENTIRELY BY THE LOCAL SPONSOR INCLUDING ADMINISTRATIVE AND LITIGATION EXPENSES. FEDERAL FUNDS WILL NOT BE MADE AVAILABLE TO CONDUCT THE ACTUAL RELOCATION OR ACQUISITION. MOREOVER, ANY FEDERAL ACTION SHALL IN NO WAY DETERMINE THE ULTIMATE APPORTIONMENT OF THE RELOCATION OR ACQUISITION COSTS BETWEEN THE OWNER(S) AND THE LOCAL SPONSOR.

HOWEVER, THE GUIDANCE LETTER FURTHER PROVIDES:

CONTINUED CONSTRUCTION ON A NAVIGATION PROJECT SHOULD NOT BE COMPROMISED BY THE REFUSAL OF THE OWNER(S) OF ITEMS OR FACILITIES LOCATED WITHIN THE NAVIGATIONAL SERVITUDE TOP REMOVE OR PAY THE COST OF REMOVAL OF SUCH ITEMS. AS A LAST RESORT, THE FORCED REMOVAL OF ANY ITEM WITHIN THE BOUNDS OF THE NAVIGATIONAL SERVITUDE MAY PROCEED USING FUNDS MADE AVAILABLE JOINTLY BY THE FEDERAL GOVERNMENT AND THE LOCAL SPONSOR, IN PROPORTION TO THE COST SHARING APPROPRIATE FOR THE PROJECT. THE DISTRICT COUNSEL SHOULD EXPLORE AND DEVELOP ALL AVAILABLE MEANS FOR RECOUPING ANY SUCH EXPENDITURES FOR REMOVALS FROM THE APPROPRIATE OWNERS, INCLUDING ANY NECESSARY COORDINATION WITH THE LOCAL UNITED STATES ATTORNEY. SUCH COSTS SHOULD INCLUDE ALL NECESSARY ADMINISTRATIVE AND LITIGATION EXPENSES. UPON RECOVERY THE LOCAL SPONSOR SHALL BE REIMBURSED FOR ITS SHARE.

IN OUR JUDGMENT IF THE CORPS IS PREPARED AS IT INDICATES TO EXERCISE ITS AUTHORITY TO ENFORCE UTILITY RELOCATIONS AS A LAST RESORT, THEN WE SUBMIT THE CORPS SHOULD BE WILLING ON A CASE-BY-CASE BASIS AS INDICATED BY PRE-1986 PRACTICE TO INVOKE THE PERMIT CONDITIONS IN ORDER TO ACCOMPLISH THE NECESSARY RELOCATIONS, OR IN THE ALTERNATIVE, ALLOW THE NON-FEDERAL SPONSOR TO ENFORCE THE CORPS PERMIT CONDITION IN THE FIRST INSTANCE WITHOUT HAVING TO SUE THE CORPS TO ACCOMPLISH THE SAME RESULT.

ACCORDINGLY, WE REQUEST THE SUBCOMMITTEE INSTRUCT THE CORPS THAT WHERE SUCH AUTHORITY IS INADEQUATE THAT THE CORPS ENFORCE EXISTING PERMIT CONDITIONS TO EFFECT REQUIRED PROJECT-RELATED RELOCATIONS, OR IN THE ALTERNATIVE PERMIT THE NON-FEDERAL SPONSOR TO ENFORCE THOSE SAME CONDITIONS AS APPROPRIATE.

SECTION 916 FEDERAL PROJECT REPAYMENT DISTRICTS

SECOND, SECTION 916 OF THE 1986 ACT AUTHORIZES THE SECRETARY TO ENTER INTO AN AGREEMENT WITH A NON-FEDERAL SPONSOR IN ADVANCE OF PROJECT CONSTRUCTION TO PERMIT THE SUBSTITUTION OF THE ESTABLISHMENT OF A FEDERAL PROJECT REPAYMENT DISTRICT WITH THE AUTHORITY TO LEVY ASSESSMENTS ON REAL PROPERTY LOCATED WITHIN THE DISTRICT BOUNDARIES FOR THE REQUIRED DEPOSIT OF LOCAL FUNDS IN ADVANCE OF CONSTRUCTION

SO LONG AS THE NON-FEDERAL DEMONSTRATES TO THE SECRETARY'S SATISFACTION THAT ASSESSMENTS COLLECTED BY THE REPAYMENT DISTRICT ARE SUFFICIENT TO EQUAL OR EXCEED COST RECOVERY REQUIREMENTS OVER THE TERM OF REPAYMENT UNDER FEDERAL LAW, IN THE CASE OF A NAVIGATION PROJECT PRINCIPALLY DURING THE PERIOD OF CONSTRUCTION. THIS PROVISION HAS SUBSEQUENTLY BEEN INTERPRETED BY THE CORPS TO ENCOMPASS ONGOING PROJECTS DURING THE PERIOD OF CONSTRUCTION IN THE CASE OF A PROJECT SUBJECT TO MULTI-YEAR CONTRACTS.

NO GUIDANCE HAS BEEN ISSUED BY THE CORPS TO IMPLEMENT THIS SECTION OF THE LAW. IN THAT REGARD WE HAVE EXPLORED THE ESTABLISHMENT OF A NAVIGATION SPECIAL ASSESSMENT DISTRICT UNDER A 1988 REVISION TO STATE LAW PERMITTING A PORT OR HARBOR DISTRICT TO EMPLOY SUCH A MECHANISM TO ASSESS A LEVY AGAINST REAL PROPERTY LOCATED IN SUCH A DISTRICT FOR BENEFITS RECEIVED FROM NAVIGATION IMPROVEMENTS. WE ARE CURRENTLY REVIEWING THE POSSIBLE UTILIZATION OF SECTION 916 AND THE COMPLEMENTARY PROVISION SUBSEQUENTLY ADOPTED IN CALIFORNIA WITH THE OPTION OF TO ESTABLISHING A NAVIGATION SPECIAL ASSESSMENT DISTRICT TO FINANCE ALL OR A PART OF THE ADDITIONAL LOCAL SHARE OF PROJECT CONSTRUCTION DURING THE REMAINING PERIOD OF CONSTRUCTION.

WE REQUEST THE SUBCOMMITTEE TO DIRECT THE ASSISTANT SECRETARY OF THE ARMY TO REVIEW THIS PROVISION FOR ITS APPLICABILITY TO NAVIGATION PROJECTS AND TO ISSUE APPROPRIATE GUIDELINES TO BE APPLIED ON A CASE-BY-CASE BASIS TO NEW AND ONGOING PROJECTS.

THANK YOU

Mr. **Langner**. Thank you, John.

We have Commissioner James Blecha with the Port of San Luis.

Mr. **Blecha**. Port San Luis Harbor is located on the central coast of California, 53 miles north of Point conception. The closest harbors are Morro Bay, 20 miles upcoast, and Santa Barbara, 80 miles to the south.

The port is located at the northern end of San Luis Bay in the lee of Point San Luis. Partial protection of port facilities against incident waves from the northwest is provided by the Point San Luis Federal breakwater which extends southeast from Point San Luis.

Our Federal breakwater was authorized by Congress in 1888 and the construction was completed in 1913. In 1924, 300 feet of the structure was breached. this breach was repaired with a concrete cap in 1927 which washed out again in 1935.

The slopes were then covered with 14-ton stone. The severe winter storms of 1982–1984 caused extensive damage to the breakwater. Structural repairs were made in 1984 when approximately 5,000 tons of stone were reset at various points along the length of the breakwater.

The existing Federal breakwater is 2,400 feet in length and constructed of rubblemound approximately 20 feet wide at the crest with an average elevation of plus-11 feet above Mean Lower Low Water [MLLW].

U.S. Army Corps of Engineers design elevation is established plus-16 MLLW. Thus, there is a present height deficit of five feet resulting in a minimal breakwater height and harbor protection.

By contrast, the breakwater structure at the Diablo Canyon Nuclear Power Plant, seven miles upcoast from Port San Luis, is built of interlocking, 36-ton tribar topped by 400-ton concrete caps with a crest height of plus-20 feet above MLLW and a width of 19 feet. Waves in excess of 29.5 have been measured at this structure.

The Army Corps of Engineers surveyed the Point San Luis Federal Breakwater in 1986, and it was determined that $2,306,000 is required to bring the structure up to its design specifications.

Of this $2.3 million, only $1,288,999 or 56 percent was actually budgeted for 1990-91. We are requesting that the full amount of $2,306,000 be allocated for the construction necessary to bring the Point San Luis Federal Breakwater up to its design standards.

Thank you.

Mr. **Langner**. That was a very expeditious delivery indeed.

The Commissioner is accompanied by Carolyn Moffatt.

[The statement of James Blecha follows:]

BOARD OF COMMISSIONERS

CAROLYN MOFFATT President
BRITT PHILLIPS Vice Pres.
KEITH KELSEY Secretary
JIM BLECHA Commissioner
PAT FARRIS Commissioner

PORT SAN LUIS HARBOR DISTRICT

P.O. BOX 249 • (805) 595-2381
AVILA BEACH, CALIF. 93424

HERB KETAY Harbor Manager
K. ROBIN BAGGETT Legal Counsel
DUANE F. YOUNG, CPA Treasurer

REQUEST TO PROVIDE $1,018,000.00 BACK INTO THE FEDERAL BUDGET TO MAKE REPAIRS TO THE PORT SAN LUIS, CALIFORNIA BREAKWATER

April, 1990

PORT SAN LUIS HARBOR is located on the central coast of California, 53 miles north of Point Conception. The closest harbors are Morro Bay, 20 miles upcoast and Santa Barbara, 80 miles to the south. The port is located AT the northern end of San Luis Bay in the lee of Point San Luis. Partial protection of port facilities against incident waves from the northwest is provided by the Point San Luis Federal breakwater which extends south-east from Point San Luis.

Our Federal breakwater was authorized by Congress in 1888 and the construction was completed in 1913. In 1924, three hundred feet of the structure was breached. This breach was repaired with a concrete cap in 1927 which washed out again in 1935. The slopes were then covered with 14-ton stone. The severe winter storms of 1982-84 caused extensive damage to the breakwater. Structural repairs were made in 1984 when approximately 5000 tons of stone were reset at various points along the length of the breakwater. The existing Federal breakwater is 2,400 feet in length and constructed of rubblemound approximately 20 feet wide at the crest with an average elevation of +11 feet above Mean Lower Low Water (MLLW). U.S. Army Corps of Engineer design elevation is established +16 MLLW. THUS, THERE IS A PRESENT HEIGTH DEFICIT OF 5 FEET, RESULTING IN A MINIMAL BREAKWATER HEIGTH AND HARBOR PROTECTION.

By contrast, the breakwater structure at the Diablo Canyon Nuclear Power Plant, seven miles up coast from Port San Luis, is built of interlocking, 36-ton tribar topped by 400 ton concrete caps with a crest heigth of +20 feet above MLLW and a width of 19 feet. Waves in excess 29.5 feet have been measured at this structure.

The Army Corp of engineers surveyed the Point San Luis Federal Breakwater in 1986 and it was determined that $2,306,000 is required to bring the structure up to it's design specifications. Of this $2.3 million, only $1,288,000.00, or 56% was actually budgeted for 1990-91. WE ARE REQUESTING THAT THE FULL AMOUNT OF $2,306,000.00 BE ALLOCATED FOR THE CONSTRUCTION NECESSARY TO BRING THE POINT SAN LUIS FEDERAL BREAKWATER UP TO IT'S DESIGN STANDARDS.

At this time, additional breakwater structures are not economically feasible at Port San Luis. Therefore, it is VITAL to the economy of Central California that the Federal breakwater at Point San Luis be maintained in as good condition as possible.

Key Facts About Port San Luis, California

☐ Port San Luis is a commercial port with a newly constructed, $28 million marine oil terminal, which docks over 10 tankers monthly and off-loaded over 554,000 tons of petroleum product in 1989.

☐ Over 65% of the users of our port facilities are commercial fisherman with salmon, albacore, crab, shark, bottom fish, and kelp harvesting as the most prominent fisheries.

☐ CLEAN SEAS petroleum-cleanup vessels and support equipment are based at Port San Luis Harbor. This is due to close proximity to the existing and proposed offshore oil facilities.

☐ Barges and tug boats use the Port San Luis harbor to support the existing oil tanker traffic and the DIABLO CANYON ATOMIC POWER PLANT.

☐ The present mooring area is at full capacity, with a current waiting list of over 100 persons for new moorings. Plans are being made to increase the number of moorings by 25% to meet increasing commercial fishing and recreational vessel demand.

☐ Modern vessel haul-out facilities, up to 60 tons capability, operate at full capacity throughout the year with over 300 boats hauled out annually. Haul-out operations are often limited by adverse weather and sea conditions.

☐ Many restaurants, motels, resorts, and other businesses around San Luis Bay and at Port San Luis benefit directly by the safe beaches and quiet water created our existing breakwater. A $4.2 million camping park is being planned for the boating public on 26 acres above the harbor and the acquisition, restoration, and planned public access to the historic Victorian 1890 Lighthouse at Point San Luis is being pursued by the Port San Luis Harbor District.

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2

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INDEX TO PHOTOS ON PREVIOUS PAGE

PHOTO NUMBER	DESCRIPTION
1	PORT SAN LUIS BREAKWATER DURING HIGH SEA CONDITIONS. NOTE AREA AWASH AT TOP OF PHOTO, JUST BELOW WHALER'S ISLAND.
2	BREAKWATER COVERED BY TWENTY FOOT WAVE WITH SMALL BOATS IN ANCHORAGE AREA BEHIND BREAKWATER ENDANGERED.
3	PORT SAN LUIS HARBOR VIEWED TO THE WEST. NOTE THE SERENE CONDITIONS WHICH CAN CHANGE ABRUPTLY WHEN COMBINATION OF HIGH TIDES AND SOUTHERLY OR NORTH-WEST STORM CONDITIONS PREVAIL, AS SHOWN IN PHOTO # 2.
4	BREAKWATER VIEWED FROM THE WEST.
5	CLOSE-UP VIEW OF RUBBLEMOUND BREAKWATER. NOTE LOW HEIGTH, AS COMPARED TO NORMAL HEIGTH OF ON-COMING WAVE. PROPOSED FUNDING WOULD REPAIR EXISTING BREAKWATER FROM THE PRESENT AVERAGE HEIGTH OF +11 FEET ABOVE MLLW TO ITS U. S. ARMY CORPS OF ENGINEERS DESIGNED HEIGTH OF +16 FEET ABOVE MLLW.

Mr. LANGNER. Brian Foss, who appeared before you many times, Port Director of Santa Cruz Port District.

Mr. Foss. Good morning.

One of the things I want to say is a continuing success story at Santa Cruz. As you recall that 24 years prior to 1986, we used to come back for a yearly appropriation about a million dollars to clear our channel.

In 1986 the Congress and the Port District joint venture bypassed the system, which is now operated at no cost by the Federal Government, and we are a hundred percent open.

And that is a $20 million commercial fishing and directory industry that generates to the county, and that is quite large for our small community.

And it's—thank you again. It's a wonderful story for us.

Here this morning we have a $300,000 Corps of Engineers Feasibility Study for improvements to our jetty system which would reduce some of the hazards that remain and the volume of sand that does come in.

So we ask your indulgence on one more study for perhaps a further success story.

Thank you.

[The statement of Bryan Foss follows:]

Santa Cruz Harbor Dredge

"SEABRIGHT"

On The Job

A Successful Joint-Venture Story

U.S. Army Corps of Engineers

and

Santa Cruz Port District

SANTA CRUZ
HARBOR

April 4, 1990

Honorable Tom Beville, Chairman
House Subcommittee on Energy and Water Development
Rayburn House Office Building
Washington, DC 20505

TESTIMONY FOR LEGISLATIVE APPROPRIATION

Summary

Project:	Federal Navigation Project at Santa Cruz Small Craft Harbor, Santa Cruz, California
Proposal:	A U.S. Army Corps of Engineers Reconnaissance Study of Jetty System under PL 99662

Submitted by:

Santa Cruz Port District

Santa Cruz Port District
135 5th Ave., Santa Cruz, CA 95062 (408) 475-6161

Background

Historically, Santa Cruz Harbor has been plagued by massive yearly shoaling. In 1985, Santa Cruz Port District and the federal government signed a joint venture agreement for a sand bypass plant for the federal project. This venture resulted in a completed system in 1986. Since that time, the harbor has been open 100% of the time, resulting in great recreational and commercial benefit to the users of the facility, as well as to the 1,000+ employees who make their living on the harbor complex.

Since the Port District has operated the bypass system since 1986, there has not been one dollar of federal cost. The total savings to the federal government over the 27+ year life of the project is estimated at well over $20 million of today's dollars.

The Congress, U.S. Army Corps of Engineers, and the Port District can all be proud of the joint venture project that they have created.

Proposal and Request

The Santa Cruz federal harbor project still suffers from massive shoaling, breaking waves in the entrance, and damaging surge within the harbor. In recognition of this, Congress passed PL 99662 which authorized a comprehensive study of the Santa Cruz jetty system. This study will identify design modifications to mitigate or eliminate the existing problems.

The first stage of this is a $300,000 U.S. Army Corps of Engineers reconnaissance study. This is not now a part of the President's FY 91 Budget. We ask that this be changed and that $300,000 be appropriated so the Corps can proceed with this project.

Mr. LANGNER. Nice to hear a success story like this when Brian brings us news. He also brings us news that probably the hardest hit of any in proportion to his size was his harbor, and we are going to have a seminar down there in June on this very subject.

We have Eric Bourdon, Los Angeles County Department of Beaches and Harbors.

Mr. BOURDON. Thank you, Mr. Chairman, members of the Commission.

Our department manages 31 miles of shoreline, and we have about 75 mile visitors to these recreational facilities every year.

I think this probably makes them the heaviest used certainly urban recreation resource in the Nation.

Additionally, the beaches can serve and do serve as a protective barrier to protect billions of dollars of public property.

But the reason I am here this morning is to ask your help in funding a very important study, it's the Coast of California Storm and Titlewave Study, and we need to expand this study to the next segment, which is Los Angeles and Orange county.

To do that, we need an appropriation in 1991 of $400,000. This study does require local participation and both Los Angeles and Orange Counties have agreed to serve and work together as local sponsors.

Thank you for your consideration, gentlemen, and we appreciate it.

[The statement of the Los Angeles County Department of Beaches and Harbors follows:]

COUNTY OF LOS ANGELES
DEPARTMENT OF BEACHES AND HARBORS

TED REED
DIRECTOR

ERIC BOURDON
ASSISTANT DIRECTOR

CHRIS KLINGER
DEPUTY DIRECTOR

STAN WISNIEWSKI
DEPUTY DIRECTOR

March 22, 1990

Honorable Tom Bevill, Chairman
Energy and Water Development Subcommittee
House Committee on Appropriations
2362 Rayburn House Office Building
Washington, D.C. 20515

Dear Chairman Bevill:

SUBJECT: LOS ANGELES COUNTY SHORELINE EROSION CONTROL
STUDIES AND DREDGING

The Board of Supervisors of the County of Los Angeles respectfully requests the serious consideration of the Congress of the United States for several projects urgently required to preserve and restore a vital and precious asset, the 75 mile shoreline of Los Angeles County, including the Marina del Rey Small Craft Harbor.

County beaches continue to be extremely vulnerable to future storms such as those which caused millions of dollars of damage in 1983 and 1988.

Healthy beaches are necessary, natural buffers to protect public facilities from the unpredictable forces of the ocean. Because Los Angeles County has one of the most heavily urbanized and developed shorelines in the country, it is important to fund and complete the studies and dredging project requested below in order to help prevent future damage to significant public investments in shoreline facilities.

California Storm and Tidal Wave Study (Approximate cost: $400,000)

To date, the California Storm and Tidal Wave Study has examined the San Diego County coast to document changes in the shoreline and compile a technical data base quantifying those changes. The data base provides information necessary for decisions regarding the restoration and maintenance of the shoreline. This segment of the California Coast is now complete. Funding of $400,000 should be approved in fiscal year 1991 to initiate monitoring and analysis work in the South Coast Region, which includes Orange and Los Angeles Counties. Los Angeles and Orange Counties are working to put together a program to act as local co-sponsors and jointly cost-share, on a 50-50 basis, with the Federal Government.

Honorable Tom Bevill
March 22, 1990
Page 2

The Los Angeles-Orange County coastline is a heavily populated region with the highest beach use in the United States. Vulnerable public and private property along the immediate coastline is continually threatened by severe storm damage. Therefore, information from this study will help local government make better land use and coastal protection decisions.

Information from this study could serve to prevent problems in the future such as the breaching of the Los Angeles Harbor and Redondo Beach Harbor seawalls, and damage to Santa Monica Pier.

The Corps of Engineers should be directed to place emphasis on the reach of shoreline from the western Los Angeles County line to Dana Point in Orange County. The County of Los Angeles is now expending $500,000 for shoreline profiles, and has prepared coastline surveys and data collections since the 1940's. This information will be made available for the study.

Marina del Rey Dredging Project (Approximate cost: $1,700,000)

Marina del Rey Small Craft Harbor is a vital asset to the County of Los Angeles and to the boating public. Marina del Rey Small Craft Harbor was built during the late 1950's as a joint-venture involving Federal and County government. At that time the Federal Government agreed to maintain the project design depths of the entrance and main channel of the harbor. The Corps FY 1991 budget includes $1.7 million targeted specifically for dredging Marina del Rey.

Any assistance you can offer will be greatly appreciated.

Very truly yours,

Ted Reed, Director

TR:LC:js

Mr. Langner. Our final witness is one very well known to you, Frank Boerger, who does such a wonderful job, who is the Vice Chairman Elect of C-MANC, including his role with the Golden Gate Ports Association, in which role he is appearing today.

Frank.

Mr. Bevill. Bob, I see you saved your most important witness for last.

Mr. Boerger. Thank you very much. It's a pleasure to be here as usual.

I have submitted a written statement for the record, and I am not going to go into it in very much detail.

We have requested this year for the first time additional funds over and above the President's budget to meet four important needs, two of which I would like to mention to you now.

The first of which you have already heard about, and that is the continuation of the construction of the channel deepening project for the Port of Richmond, one of our member ports. And you have already heard about that, so I won't go into any more detail.

But the whole port community that is served through the Golden Gate that I represent is in favor of proceeding with that project because it's an important part of the total port system in the Bay Area.

The second item where we have asked for more money than included in the President's budget is the matter of money for the Corps of Engineers from the O&M budget for continuing the long-range management program for dredge material disposal.

We have been moving rather slowly on that project, but have had some new impetus with leadership from the Corps of Engineers, EPA, and the local and regional agencies in the Bay Area.

But the study is presently underfunded. We are going to need in the neighborhood of $5 million more than has been allocated to date in budget in order to support that study adequately so that we are certain that we find environmentally sound solutions to this whole problem of management for the next many years.

So we are requesting this additional money in order to be sure that that project is done carefully. We appreciate the great cooperation of this committee in the past. We know that through your foresight we have been able to start these projects. We think it's important that we continue them and that we provide adequate maintenance to see that they are usable in the future.

Thank you very much.

Mr. Foss. Mr. Chairman, I just wanted to say at the end of the hearing as I did at the beginning because we have a new group of visitors, how much our delegation appreciates the work of the staff of this committee and certainly of you, Mr. Chairman, and Mr. Myers, who have not only come out to California, visited these projects, gotten to know the people personally, but have been so steadfast in finding extra funds to augment the budget when needed.

This particular problem that Frank has talked about is very important in northern California and to all of the commerce that flows through there.

We really do have to get our act together locally. We are in the process of doing that with some local cost-sharing to prove it. And we think that this project can move forward if the committee can help find the funds.

You all know how much we value Los Angeles-Long Beach, and I am glad to see these people here today to support the continuing project that is so important to our entire country.

Thank you, Mr. Chairman.

[The statement of Frank Boerger follows:]

Golden Gate Ports Association
2201 West Washington, P.O. 2089, Stockton, California 95201 • (209) 946-0246

United States House of Representatives
Committee on Appropriations
Subcommittee on Energy and Water Development
Honorable Tom Bevill, Chairman
April 4, 1990

My name is Frank Boerger. I represent the Golden Gate Ports Association (GGPA). This association is a cooperative venture by the six public ports that are served through the Golden Gate, namely Oakland, Redwood City, Richmond, Sacramento, San Francisco and Stockton. The ports of this association furnish a major gateway to the United States from the countries around the Pacific Rim. It contributes annually about $3 billion in sales actions and $1.7 billion in regional gross product. The region is the fourth largest consumer area in the United States. About 45,000 jobs with payrolls of $1.2 billion are attributed to the maritime agencies served in the region of the Golden Gate. The total economic benefits that accrue to the area, based on this maritime industry, are more than $10 billion annually and the support facilities include a total of about 79,000 jobs.

GGPA recommends increased appropriations over the President's budget for four important projects as presented by C-MANC. The first and foremost of these is for the Port of Richmond which is an important and integral part of the system that services this area. In this connection the recommendation for a million dollars to continue construction of this channel deepening is essential and should be recommended by the Congress. The infrastructure covering the Local Sponsor's participation and dedication to this project is in place and on schedule with the Corps' critical path network time frame.

Another very important need is the development of a long-term solution to dredged material disposal for the entire Bay system. The Corps of Engineers, with the EPA, has suggested a comprehensive scope of work that will provide environmentally sound solutions to dredged material disposal including upland, in-bay and ocean disposal. There have been many suggestions for cost-sharing of important studies over the last several months. These proposals have hindered the progress that should have been made in developing solutions. The GGPA recommendation concurs that allocating an additional $5.47 million as part of the O&M budget to the Corps of Engineers, with the directive that these funds be used for the initiation and completion of studies to formulate the long-term maintenance strategy for the Bay Area, will provide the needed impetus to this program. Of course, the $1.53 million in the President's budget will be needed in any case for continued maintenance of existing channels.

In order to preserve and continue important responsibilities of the Corps, it is recommended that an increase to $2.8 million be allocated for the San Francisco Bay-Delta Model Structure maintenance and an increase to $2.0 million for Drift Removal.

Therefore I appear to support the recommendations, which GGPA helped formulate, of the California Marine Affairs and Navigation Conference regarding Corps of Engineers' projects in the area served through the Golden Gate. We support the suggestions in the President's budget for continuing construction at the ports of Oakland and Sacramento and the San Francisco Bay to Stockton project. We also support the maintenance dredging requirements for the channels to the Ports of Richmond, Redwood City, those Suisun Bay channels to the Ports of Sacramento and Stockton, and those in San Pablo Bay and Mare Island Strait.

This Committee has long shown great prescience in adopting and proceeding with important programs across the country. We believe that our recommendations in this next fiscal year follow the leadership that this Committee has provided by continuing important projects once they are underway and seeing them through to completion with adequate provisions for long-term maintenance.

Mr. LANGNER. And also may serve as a prototype in many respects.

And in my prepared testimony, I have referenced on Page 2 and 3 some of our background, which is very familiar to you, and some of our complaints, the goods and bads, and the pluses and the minuses. But they are there for the record.

We also want to see improvement in the way things are handled, and we still have some complaints, unfortunately, which I try to delicately refer to in my testimony.

We do have some other witnesses and people here, not witnesses, but supporters that you referred to. If I could just read them off for the record.

North coast where all the good crabs comes from, Jack Alderson, Commissioner Bob Davenport, and Dennis Hunter from Humboldt Bay Harbor and Recreation District.

Mr. BEVILL. Raise your hands, if you will.

Mr. LANGNER. Dave Bernardi, and from the Port of Redwood City, there is a member here, I hope they are here, but they are Commissioners Jack Castle, Dick Dodge, Floyd Shelton, Walter Small, and Guy Smith.

From San Mateo Harbor District, Jean Flocks.

From Daniel, Mann, Johnson & Mendenhall we have Rod Lundin, Chuck Rendall, and Jerry Seelman.

From the Oxnard Harbor District, well known as our past chairman and now president of the district, Edward Millan—pardon me, Bob Jennings, Harbor Commissioner; Carl Nelson from the Keith Companies; Donald Webb and John Wolter from the City of Newport Beach; Bob Wright, Chairman of Marine Parks of California, and photographer; and Charley Abbott, President of Charles Abbott Associates; and Vernonica Sanchez, Port of San Francisco.

[The statement of Jean Flocks follows:]

SAN MATEO COUNTY HARBOR DISTRICT

BOARD OF
HARBOR COMMISSIONERS
CHARLES J. BOERIO
RAYMOND B. FARNOW
JEAN J. FLOCKS
FRANK LEE
VICTOR T. SUBBOTIN

GENERAL MANAGER
DONALD F. GULUZZY

April 4, 1990

From: **Commissioner Jean Flocks**
San Mateo County Harbor District

HOUSE APPROPRIATION SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

Honorable Chairman and members of the committee, my name is Jean Flocks and I am a Commissioner for the San Mateo County Harbor District, which is a special district located in Northern California, near San Francisco. It is indeed a pleasure to appear before you again as both a Director of CMANC and as a long time member of the San Mateo County Harbor District's Board of Commissioners. I have two items I would like to state for the record:

(1) First of all, San Mateo County Harbor District totally agrees and endorses the CMANC Funding Package that has been presented to you for your consideration.

(2) San Mateo County Harbor District wants to go on record as making this committee and the entire Congress of the United States aware of the fact that it believes that small ports, harbors and marinas in the State of California need your continued support and that of the Army Corp of Engineers in order to continue to provide maintenance dredging and other essential services to keep our operations economically viable.

1 JOHNSON PIER, P.O. BOX 39, EL GRANADA, CA 94018 TEL: (415) 726-4723 FAX: (415) 726-7740

The Army Corp of Engineers originally built the outer breakwaters for Pillar Point Harbor (Half Moon Bay, CA) through an appropriation of Congress, in 1961. It allowed us to have a very vital harbor of refuge constructed which serves not only recreational boaters in Northern California but, more importantly, commercial fishermen who utilize our port to provide California and the nation with an abundant and fresh supply of healthy, delicious fish. This is particularly important at this time in our history since the nation appears to be following a more nutritious lifestyle which focuses more on fish products than they have in the past.

Our fishing industry in San Mateo County represents over $10 million a year in gross income to the commercial fishermen who utilize our port. As you know, under the multiplier concept, these funds generate another 2-1/2 to 3 times their weight in additional spending throughout California. The result is revenue that comes to the federal government in high income tax dollars which helps fund our federal budget. The Harbor District would like you to consider the fact that since the military situation in Europe looks increasing favorable in terms of a reduction of military manpower and equipment, military spending can and should be reduced significantly in the future. It is our sincere hope that Congress in the near future will allocate more funding to the Army Corp of Engineers and ensure that maintenance dredging and other necessary and essential services that they have provided to small ports and harbors like ours all over the country can be fully funded and maintained in the future.

Small ports and harbors cannot afford to do maintenance dredging and/or repairs to their extensive breakwaters because they do not generate enough revenue from boating and/or the fishing community to carry out these public works-type projects. If the Army Corp of Engineers abandons the small ports and harbors in favor of those that are large, who incidentally can afford to pay for their own maintenance dredging and repairs, then Congress will be doing a grave injustice to the small businessmen and fishermen who will be forced out of our harbors and marinas because they can no longer berth there and use them as a port of refuge.

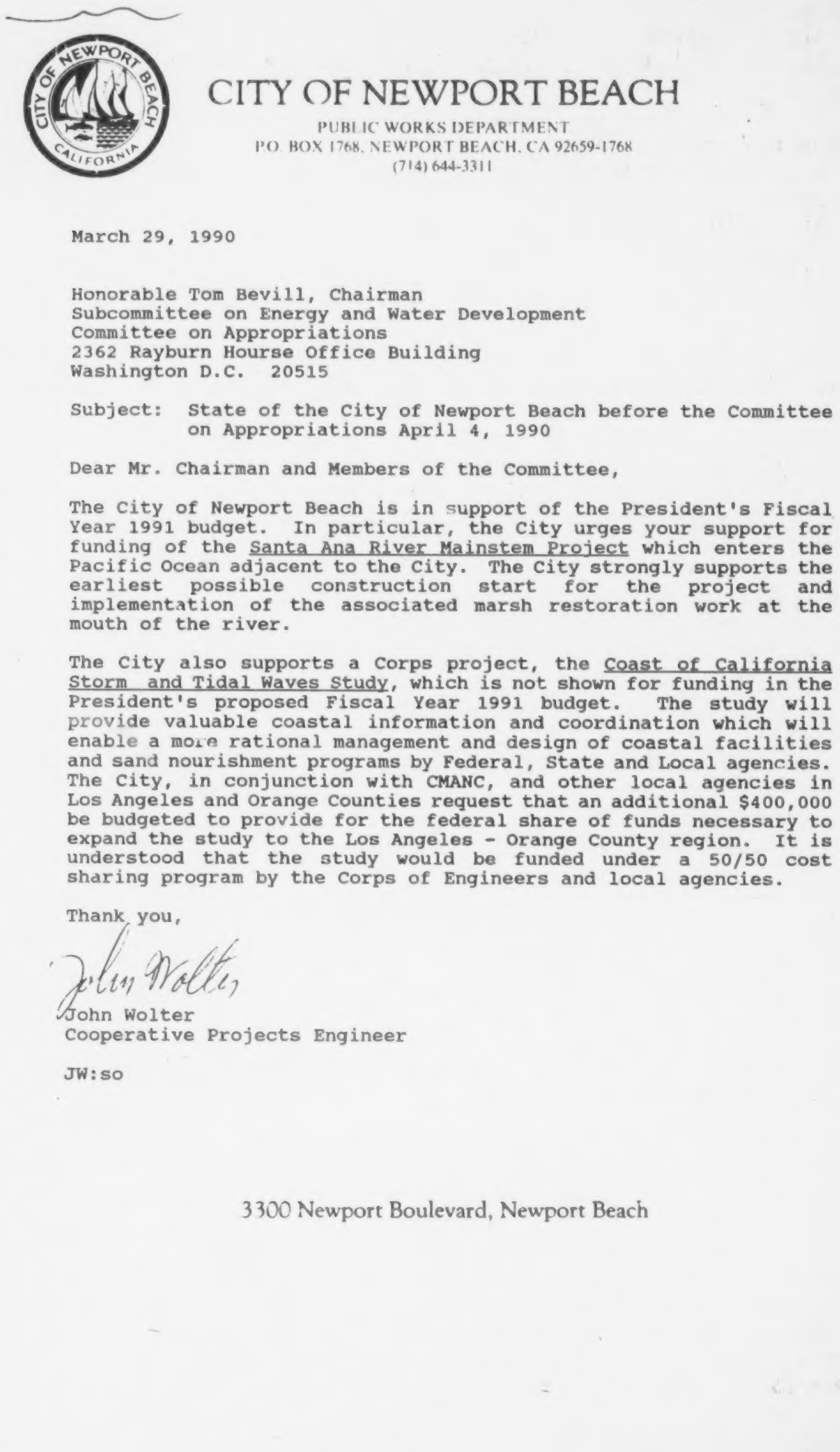
Future military appropriations that had formerly gone to the defense industry should be shifted to public works type projects that provide employment, revenue and taxes as well as enjoyment to the many thousands of people who utilize our ports and marinas for business and pleasure.

We again ask congress to think long term and continue the time-honored long term support congress has provided since the 1800's.

Your support for the Army Corp of Engineers projects is vitally important. We urge you to continue to fund the small ports, marinas and harbors throughout this country as you have in the past.

JF/mp
JF/wadc

[The statement of John Wolter follows:]



CITY OF NEWPORT BEACH
PUBLIC WORKS DEPARTMENT
P.O. BOX 1768, NEWPORT BEACH, CA 92659-1768
(714) 644-3311

March 29, 1990

Honorable Tom Bevill, Chairman
Subcommittee on Energy and Water Development
Committee on Appropriations
2362 Rayburn Hourse Office Building
Washington D.C. 20515

Subject: State of the City of Newport Beach before the Committee on Appropriations April 4, 1990

Dear Mr. Chairman and Members of the Committee,

The City of Newport Beach is in support of the President's Fiscal Year 1991 budget. In particular, the City urges your support for funding of the Santa Ana River Mainstem Project which enters the Pacific Ocean adjacent to the City. The City strongly supports the earliest possible construction start for the project and implementation of the associated marsh restoration work at the mouth of the river.

The City also supports a Corps project, the Coast of California Storm and Tidal Waves Study, which is not shown for funding in the President's proposed Fiscal Year 1991 budget. The study will provide valuable coastal information and coordination which will enable a more rational management and design of coastal facilities and sand nourishment programs by Federal, State and Local agencies. The City, in conjunction with CMANC, and other local agencies in Los Angeles and Orange Counties request that an additional $400,000 be budgeted to provide for the federal share of funds necessary to expand the study to the Los Angeles - Orange County region. It is understood that the study would be funded under a 50/50 cost sharing program by the Corps of Engineers and local agencies.

Thank you,

John Wolter

John Wolter
Cooperative Projects Engineer

JW:so

Mr. BEVILL. Thank you, Bob. You always do a great job; and, as a matter of fact, you are the only one that can give us a minute back.

Mr. FOSS. That is very valuable.

Mr. BEVILL. After many hours of hearings we appreciate that much.

Mr. BEVILL. Mrs. Bob Langner was in here a minute ago, and so I want to recognize her.

Mr. LANGNER. My wife finally came to hear me testify, after 32 years.

Mr. BEVILL. She hasn't heard you but 32 times.

Mr. LANGNER. I am impressed.

Thank you.

Mr. MYERS. Mr. Chairman, may I?

Mr. BEVILL. Yes.

Mr. MYERS. This committee hears a lot of witnesses, but I must say I think California not only has the most residents, but the most people here, too, and that's impressive.

You spend your money to come and testify for programs that you need. Good for your state, for your community as well as the country. But you also, for the first time, I believe, have a hundred percent of the congressional delegation behind you, which is also very important.

Through the years the chairman and I have been on this committee, you have had a divided delegation here sometimes. That makes our job very difficult. But the fact that you are here and you have good people like Congressman Vic Fazio and other people who have testified here today does make our job easier when we go to battle with the other body or over differences of opinion on the House Floor.

The support that you give your programs certainly is important, and the facts you give us makes our job a lot easier. So I would thank you for coming once again.

Mr. LANGNER. Warmly reciprocated.

We thank all of you.

WEDNESDAY, APRIL 4, 1990.

ST. PAUL FLOOD CONTROL PROJECT

WITNESS

HON. BRUCE VENTO, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MINNESOTA

Mr. BEVILL. The committee will come to order.

We have our good friend and colleague, Congressman Bruce Vento here. The Chair recognizes you. Your prepared statement will be made a part of the record.

Mr. VENTO. Thank you very much, Mr. Chairman.

I will be brief. I appreciate your patience. And you are running early this morning, and I am running a little late. My apologies.

What I am here to talk about and urge your support for the St. Paul Flood Control Project to provide immediate construction dollars for it. I want to thank, first of all, Chairman Bevill and the other Members of the subcommittee for their past support for this project.

As you know, we allocated money in 1988 for the general design memorandum, and in 1989 to continue that progress, and again in 1990.

So we are moving along towards the design and engineering phase and thought that we would be able to continue with that progress, based on the initial signals from the Administration in their first cut at the budget.

But by the time we got through OMB, they had cut out the construction dollars. This Mississippi River project is one that provides limitations in terms of record floods.

It protects currently 160-some million dollars worth of property, and there is anticipated development twice that value of property in the area in this, in this flood plain area, Mr. Chairman and Members, and so obviously represents a substantial economic benefit and protection in terms of this flood damage.

It also has, of course, recreation and other aspects to that project. So what I am seeking and asking the committee to do is to consider as they work their budget to try and continue or try to start the construction process here so that we can move forward.

It does represent a substantial contribution on the part of the city and of the local government, as well as, of course, the national government in terms of their work with the Corps of Engineers.

There has been good cooperation. I think the plans are in place. It's just a question here of where the budget priorities fall, and I guess I feel that this has been a long time waiting since that 1960s flood.

The city has got its act together. We have been on track. I would like to stay on track, Mr. Chairman, if it were possible.

Thank you.

[The statement of Hon. Bruce F. Vento follows:]

CONGRESSMAN BRUCE F. VENTO
STATEMENT IN SUPPORT OF THE ST. PAUL FLOOD CONTROL PROJECT
APPROPRIATIONS SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
WEDNESDAY, APRIL 4, 1990

Mr. Chairman and Members of the Subcommittee, I want to thank you for this opportunity to appear before you today in support of the St. Paul Flood Control Project of the Army Corps of Engineers on the Mississippi River in my district.

I want to thank you, Chairman Bevill, and the Members of the Subcommittee for the support you have given to this needed project in the past. As you know, $400,000 was allocated for FY1988 to begin General Design Memorandum studies. An additional $350,000 was allocated for FY1989 to continue the process and $450,000 was allocated for FY1990 to move toward completion of pre-construction design and engineering.

The Subcommittee's positive decision to make this investment over the past three years was a wise one. Following record floods on the Mississippi in 1952, the Corps was directed to design and construct a flood barrier along the Mississippi River across from downtown St. Paul. This was completed in 1964. The record floods of 1965 and 1969 demonstrated that added flood protection was needed. The Corps conducted a study of this problem and recommended in 1981 that the levee/floodwall be increased by an average of four feet in height.

We now hope to see construction begin on this badly-needed project during 1991 -- ten years after the Corps' recommendation and 26 years after the flood that brought President Lyndon B. Johnson to

St. Paul to view the devastation.

I am pleased to report to you that the Corps and the City of St. Paul are working together on this effort. The flood control project is an integral part of the St. Paul Riverfront Redevelopment Plan which was adopted in 1987. The area involved is located right in the heart of St. Paul and is a key component of the project. The present floodwall protects an estimated $164 million of existing investment. Under the City's Riverfront Redevelopment Plan, the amount of investment in the protected area is projected to more than double to a total of $322 million worth of public and private investment.

The cost of basic flood protection in this project is now estimated to be $16.3 million. Of this, the local share is to be $6.8 million according to the Corps' General Design Memorandum dated March, 1990.

As you will note, the very reasonable investment of Federal dollars here will lead to a major benefit along the Mississippi River in the capital city of St. Paul.

Unfortunately, Mr. Chairman, the President's FY1991 Budget does not include a request for funds to start construction of this project. Representatives of the City were advised that new start monies were a possibility as far into the budget writing process as late as November, 1989. But that was before the Office of Management and Budget (OMB) did its final cut on the Corps of Engineers' FY91 proposed budget. When the Budget came to Capitol

Hill in January, however, it contained only the additional $397,000 for engineering work on the project.

I respectfully request that the Subcommittee do what it has done often in the past -- to look beyond this short-sighted approach of OMB and begin to fund the construction of this key project. Very modest outlays can be anticipated for FY1991, but budget authority to begin construction would importantly keep St. Paul from falling further behind schedule than we have already. In this way, the flood protection we need can be provided and the many other local public and private investments that depend on the floodwall can go forward. Thank you.

Mr. Bevill. Thank you.

We certainly will work with you and do the best we can, Bruce. Thank you.

Mr. Vento. Thank you very much.

Thanks for hearing me.

Wednesday, April 4, 1990.

ENERGY PROGRAMS

WITNESS

HON. BILL RICHARDSON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW MEXICO

Mr. Bevill. The committee will come to order.

Congressman Bill Richardson of New Mexico is here. We will be delighted to hear from you. Your prepared statement will be made a part of your record.

Bill, you may summarize if you wish.

Mr. Richardson. Thank you, Mr. Chairman.

Once again, I appreciate the responsiveness of this subcommittee to many important projects dealing with energy and water in this country.

Mr. Chairman, I am putting my entire statement in the record. I do want to highlight the special request that I have. Many of them are already in the budget such as the Acequias irrigation system repairs in New Mexico. I am asking for consideration for a school in New Mexico, Luna Vo-Tech, some funds for environmental restoration technology. I also have a request for a special flood repair project. The Pueblo of Nambe has experienced severe flood damage due to heavy rains in July 1989.

As you may know, Mr. Chairman, I represent the Los Alamos Laboratories. The Los Alamos laboratories provide a unique resource to the country. Even though there may be a decreasing need for more nuclear weapons, it is important to maintain a healthy nuclear weapons research, development and testing program. We have an important commitment to make in verification and control technology. I strongly support funding for the Verification Control Technology Program at the labs.

I respectfully request the subcommittee to support the following increases in the budget for verification and control technology: Operating expenses, $195 million; capital and equipment funding $13 million; and an over all budget for verification and control technology of $226 million. The unconventional gas initiative is a national research initiative to convert natural gas to liquids that can help relieve our dependence on imported oil. This is not funded in the budget despite the Nation's growing reliance on imported oil. I respectfully request the subcommittee to support $3.2 million for the unconventional gas initiative.

The joint DOD/DOE Munitions Technology Development Program is a cooperative, jointly funded effort of research and development to exploit the extensive technology base and unique facilities of the DOE weapons laboratories relevant to conventional munitions. In 1985, a Memorandum of Understanding called for the DOD and DOE to contribute $15 million annually to the program.

I respectfully request the subcommittee to support funding for the DOD/DOE Joint Munitions Program.

The Oil Recovery Technology Program is a partnership between the DOE and the U.S. oil industry to implement transfer of appropriate oil recovery technologies. This program is critical to the preservation of our domestic oil production.

I can attest to the success of this program in New Mexico. A firm partnership has been established between Los Alamos and Sandia National Laboratories and the New Mexico oil industry. Several field experiments have been successfully conducted and new diagnostic technologies are on the horizon.

I respectfully request the subcommittee to support an increase of $5.8 million for the oil recovery technology partnership with $4 million added to the advanced extraction and process technology line and $1.8 million added to the enhanced oil recovery line.

Fusion energy has an important role in our energy future. If successfully developed, nuclear fusion could provide humanity with an essentially unlimited source of electricity that has environmental and safety advantages over other energy technologies. Fusion energy urgently needs to be developed to meet the Nation's growing long-term energy requirements.

I respectfully request the subcommittee to support an increase of $43.7 million for the Magnetic Fusion Energy Program.

Neutron scattering is one of the important tools used by scientists to determine the structure of materials. Materials, science and engineering, are entering a period of unprecedented intellectual challenge and productivity. Appropriate Federal support for this program is essential to a balanced development of these resources.

I respectfully request the subcommittee to be generous in this effort to increase funding for the Neutron Scattering Program.

Mr. Chairman, this concludes my testimony. In summary, I obviously have a long list. I know there are many pressing priorities. I just ask that the subcommittee respectfully review these requests.

Again, the main priority for me is obviously the programs at the laboratories at Los Alamos. I am making a special request, Mr. Chairman, I know that you are probably not going to do too many add-ons, but I am asking for a small $2.8 million support for applied science degree to train technicians in the environmental restoration technology.

The State of New Mexico is the recipient of the low level military waste that is coming into the country. We have been given, I don't know if it is a curse or blessing, the responsibility of receiving this waste. We need to train people in this area.

Mr. Chairman, I appreciate the opportunity to appear before you and the committee.

[The statement of Hon. Bill Richardson follows:]

CONGRESSMAN BILL RICHARDSON
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
HOUSE COMMITTEE ON APPROPRIATIONS
APRIL 4, 1990

THANK YOU, MR. CHAIRMAN, AND MEMBERS OF THE SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT, FOR THE OPPORTUNITY TO TESTIFY TODAY ON SEVERAL PROJECTS OF IMPORTANCE TO MY CONGRESSIONAL DISTRICT IN NEW MEXICO.

LUNA VO-TECH ENVIRONMENTAL RESTORATION TECHNOLOGY

MR. CHAIRMAN, LUNA VOCATIONAL TECHNICAL INSTITUTE IN LAS VEGAS, NEW MEXICO, PLANS TO ESTABLISH AN ASSOCIATE IN APPLIED SCIENCE DEGREE TO TRAIN TECHNICIANS IN ENVIRONMENTAL RESTORATION TECHNOLOGY. THE DEGREE WILL OFFER TWO CONCENTRATIONS OF SPECIALIZED TRAINING: 1) HAZARDOUS MATERIALS MANAGEMENT TECHNICIAN AND 2) ROBOTICS/AUTOMATED SYSTEMS TECHNICIAN.

THE PRIMARY GOAL OF THIS AA DEGREE IN ENVIRONMENTAL RESTORATION TECHNOLOGY IS: 1) TO EDUCATE, TRAIN AND PREPARE TECHNICIANS IN ALL ASPECTS OF HANDLING AND MANAGING CHEMICAL AND NUCLEAR MATERIALS AND 2) TO ADDRESS THE NEEDS OF INDUSTRY IN THE GOVERNMENT AND PRIVATE SECTORS OF THIS COUNTRY.

MR. CHAIRMAN, ACROSS THE U.S. THERE IS A PROJECTED 6.5 PERCENT INCREASE IN THE DEMAND FOR TRAINED AND QUALIFIED WORKERS IN THE FIELD OF HAZARDOUS MATERIALS. IN 1990 ALONE, REPORTS REVEAL THAT 300,000 HAZARDOUS MATERIALS TECHNICIANS WILL BE REQUIRED. UNDERSTANDING THESE MARKET DEMANDS, THE DOE HAS UNDERTAKEN NEW INITIATIVES TO ESTABLISH DOE/UNIVERSITY PARTNERSHIPS TO IMPLEMENT A VARIETY OF PROGRAMS ADDRESSING RESEARCH IN ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT. LUNA VO-TECH HAS THE CAPABILITY TO CONTRIBUTE SIGNIFICANTLY TO THIS FIELD OF RESEARCH.

I RESPECTFULLY REQUEST THE SUBCOMMITTEE TO PROVIDE $2,990,000 TO ESTABLISH AN ASSOCIATE IN APPLIED SCIENCE DEGREE AT LUNA VOCATIONAL TECHNICAL INSTITUTE TO TRAIN TECHNICIANS IN ENVIRONMENTAL RESTORATION TECHNOLOGY. MR. CHAIRMAN, FOR YOUR REFERENCE I HAVE ENCLOSED A PROGRAM PROPOSAL.

NAMBE PUEBLO FLOOD REPAIR

THE PUEBLO OF NAMBE LOCATED IN MY CONGRESSIONAL DISTRICT EXPERIENCED SEVER FLOOD DAMAGE DUE TO HEAVY RAINS IN JULY OF 1989. AS A RESULT THE PUEBLO IS IN NEED OF EXTENSIVE REPAIRS TO THE CHANNELING AND DIKE SYSTEMS ON THE RESERVATION.

FOR THE PAST SEVERAL MONTHS, NAMBE PUEBLO HAS BEEN IN CONTACT WITH THE 52ND ENGINEER BATTALION TO EXPLORE THE POSSIBILITY OF ENLISTING THE BATTALION'S ASSISTANCE FOR THE NEEDED REPAIR WORK. THE BATTALION AND ITS BRIGADE COMMANDER HAVE ADVISED THE PUEBLO AND MY OFFICE THAT THE FLOOD REPAIR WORK WOULD PROVIDE AN EXCELLENT TRAINING OPPORTUNITY AND IS ANXIOUS TO UNDERTAKE THIS COOPERATIVE EFFORT.

I RESPECTFULLY REQUEST THE SUBCOMMITTEE TO PROVIDE $140,000 FOR FUEL, TRANSPORTATION, AND MATERIALS FOR THIS PROJECT.

ACEQUIAS IRRIGATION SYSTEM REPAIRS

I RESPECTFULLY REQUEST YOUR CONTINUED SUPPORT FOR FUNDING OF THE NEW MEXICO ACEQUIAS REHABILITATION PROGRAM OF THE ARMY CORPS OF ENGINEERS. INCLUDED IN THIS YEAR'S BUDGET IS $2,000,000 FOR THE ACEQUIAS REHABILITATION PROGRAM. MR. CHAIRMAN, I URGE YOU TO SUPPORT THIS LEVEL OF FUNDING.

VERIFICATION AND CONTROL TECHNOLOGY

I STRONGLY SUPPORT FUNDING FOR THE VERIFICATION AND CONTROL TECHNOLOGY PROGRAM. IT IS IMPORTANT THAT WE HAVE DEPENDABLE VERIFICATION TECHNOLOGIES IN LIGHT OF THE INF TREATY AND THE PROPOSED START TREATY.

I RESPECTFULLY REQUEST THE SUBCOMMITTEE TO SUPPORT THE FOLLOWING INCREASES IN THE BUDGET FOR VERIFICATION AND CONTROL TECHNOLOGIES: INCREASE THE OPERATING EXPENSES BUDGET TO $195 MILLION; INCREASE CAPITAL EQUIPMENT FUNDING TO $13 MILLION. THE OVERALL BUDGET FOR VERIFICATION AND CONTROL TECHNOLOGY WOULD TOTAL $223.6 MILLION.

UNCONVENTIONAL GAS INITIATIVE

THE UNCONVENTIONAL GAS INITIATIVE IS A NATIONAL RESEARCH INITIATIVE TO CONVERT NATURAL GAS TO LIQUIDS THAT COULD HELP RELIEVE OUR DEPENDENCE ON IMPORTED OIL. THIS PROGRAM IS NOT FUNDED IN THE BUDGET DESPITE OUR NATION'S GROWING DEPENDENCE ON IMPORTED OIL.

I RESPECTFULLY REQUEST THE SUBCOMMITTEE TO SUPPORT $3.2 MILLION FOR THE UNCONVENTIONAL GAS INITIATIVE.

DOD/DOE JOINT MUNITIONS PROGRAM

THE JOINT DOD/DOE MUNITIONS TECHNOLOGY DEVELOPMENT PROGRAM IS A COOPERATIVE, JOINTLY FUNDED EFFORT OF RESEARCH AND DEVELOPMENT TO EXPLOIT THE EXTENSIVE TECHNOLOGY BASE AND UNIQUE FACILITIES OF THE DOE WEAPONS LABORATORIES RELEVANT TO CONVENTIONAL MUNITIONS. IN 1985, A MEMORANDUM OF UNDERSTANDING CALLED FOR THE DOD AND DOE TO CONTRIBUTE $15 MILLION ANNUALLY TO THE PROGRAM.

I RESPECTFULLY REQUEST THE SUBCOMMITTEE TO SUPPORT FUNDING FOR THE DOD/DOE JOINT MUNITIONS PROGRAM.

OIL RECOVERY TECHNOLOGY PARTNERSHIP

THE OIL RECOVERY TECHNOLOGY PROGRAM IS A PARTNERSHIP BETWEEN THE DOE AND THE U.S. OIL INDUSTRY TO IMPLEMENT TRANSFER OF APPROPRIATE OIL RECOVERY TECHNOLOGIES. THIS PROGRAM IS CRITICAL TO THE PRESERVATION OF OUR DOMESTIC OIL PRODUCTION. I CAN ATTEST TO THE SUCCESS OF THIS PROGRAM IN NEW MEXICO. A FIRM PARTNERSHIP HAS BEEN ESTABLISHED BETWEEN LOS ALAMOS AND SANDIA NATIONAL LABORATORIES AND THE NEW MEXICO OIL INDUSTRY. SEVERAL FIELD EXPERIMENTS HAVE BEEN SUCCESSFULLY CONDUCTED AND NEW DIAGNOSTIC TECHNOLOGIES ARE ON THE HORIZON.

I RESPECTFULLY REQUEST THE SUBCOMMITTEE TO SUPPORT AN INCREASE OF $5.8 MILLION FOR THE OIL RECOVERY TECHNOLOGY PARTNERSHIP WITH $4.0 MILLION ADDED TO THE ADVANCED EXTRACTION AND PROCESS TECHNOLOGY LINE AND $1.8 MILLION ADDED TO THE ENHANCED OIL RECOVERY LINE.

MAGNETIC FUSION ENERGY

FUSION ENERGY HAS AN IMPORTANT ROLE IN OUR ENERGY FUTURE. IF SUCCESSFULLY DEVELOPED, NUCLEAR FUSION COULD PROVIDE HUMANITY WITH AN ESSENTIALLY UNLIMITED SOURCE OF ELECTRICITY THAT HAS ENVIRONMENTAL AND SAFETY ADVANTAGES OVER OTHER ENERGY TECHNOLOGIES. FUSION ENERGY URGENTLY NEEDS TO BE DEVELOPED TO MEET THE NATION'S GROWING LONG-TERM ENERGY REQUIREMENTS.

I RESPECTFULLY REQUEST THE SUBCOMMITTEE TO SUPPORT AN INCREASE OF $43.7 MILLION FOR THE MAGNETIC FUSION ENERGY PROGRAM.

NEUTRON SCATTERING

NEUTRON SCATTERING IS ONE OF THE IMPORTANT TOOLS USED BY SCIENTISTS TO DETERMINE THE STRUCTURE OF MATERIALS. MATERIALS SCIENCE AND ENGINEERING ARE ENTERING A PERIOD OF UNPRECEDENTED INTELLECTUAL CHALLENGE AND PRODUCTIVITY. APPROPRIATE FEDERAL SUPPORT FOR THIS PROGRAM IS ESSENTIAL TO A BALANCED DEVELOPMENT OF THESE RESOURCES.

I RESPECTFULLY REQUEST THE SUBCOMMITTEE TO INCREASE FUNDING FOR THE NEUTRON SCATTERING PROGRAMS.

NUCLEAR PHYSICS PROGRAM

THE DOE SUPPORTS A BROAD PROGRAM IN FUNDAMENTAL RESEARCH IN NUCLEAR PHYSICS. A LARGE FRACTION OF THE PROGRAM IS BASED ON A FEW NATIONAL USER FACILITIES AT DOE NATIONAL OR SINGLE-PURPOSE LABORATORIES. HOWEVER, CURRENT BUDGET LEVELS ARE SO TIGHT THAT RESEARCH OUTPUT MAY BE REDUCED.

I URGE THE COMMITTEE TO INCREASE THE FUNDING LEVEL FOR THE MEDIUM ENERGY PHYSICS PROGRAM.

NUCLEAR WEAPONS RESEARCH

SHIFTING POLITICAL EVENTS ON MANY FRONTS HAVE PLACED INCREASINGLY COMPLEX REQUIREMENTS ON NUCLEAR WEAPONS RESEARCH, DEVELOPMENT AND TESTING (RD&T). AS LONG AS THERE IS A U.S. NUCLEAR DETERRENCE, THERE REMAINS A CRITICAL NEED TO SUSTAIN A HEALTHY RD&T PROGRAM. IT IS IMPORTANT TO RESTORE FUNDING FOR NUCLEAR WEAPONS RD&T TO MATCH THE SCOPE AND COMPLEXITY OF CURRENT AND FUTURE REQUIREMENTS.

I RESPECTFULLY REQUEST THE SUBCOMMITTEE TO SUPPORT THE FY 1991 BUDGET LEVEL AND INCREASE FURTHER AMOUNTS IN REGARD TO THIS ACCOUNT.

MR. CHAIRMAN, THANK YOU FOR THIS OPPORTUNITY TO TESTIFY BEFORE YOUR SUBCOMMITTEE. I APPRECIATE YOUR CONSIDERATION OF THESE IMPORTANT PROJECTS.

2750

PROPOSAL ABSTRACT

ENVIRONMENTAL RESTORATION TECHNOLOGY

SUBMITTED BY:

LUNA VOCATIONAL TECHNICAL INSTITUTE

LAS VEGAS, NEW MEXICO

MARCH 30, 1990

LUNA VOCATIONAL TECHNICAL INSTITUTE
ENVIRONMENTAL RESTORATION TECHNOLOGY

I. BACKGROUND AND SERVICE AREA

Luna Vocational Technical Institute is located in the northeastern quadrant of the State of New Mexico. While this area contains 25% of the state's geographical land mass, only 12% of the state's total population lives within its sparsely populated boundaries.

In 20 years, LVTI has become the fastest growing institution of its kind in the state. What began in extremely humble surroundings, in old and dilapidated army barracks, has developed into a multi-million dollar complex of modern and attractive buildings housing state-of-the-arts learning materials, laboratory facilities, computer assisted instruction, sophisticated student supportive services and dedicated faculty who are continually committed to improving its instructional attention.

LVTI is an institution of enormous learning value to the people who live in its service area. The Institute is a true address to a democratic society. Whereas, the public school sector could no longer fulfill the needs of a society which requires highly technical competency and specialized credentials and the universities were becoming increasingly exclusive, the technical and vocational schools began to fill the gap between the two traditional levels of education. At a time when society is experiencing a need to prepare more people for technical occupations; when so many occupations are demanding specialized training beyond the high schools; when so many of the fastest growing job opportunities do not require a university degree; and when a wider spectrum of social and cultural classes are demanding equitable opportunities, LVTI is offering service to all these societal exigencies.

The Institute persists in serving all of the people, and especially those who wish to prepare for a technical occupation in life. Where a number of institutions pride themselves in being exclusive, LVTI emphasizes that equitable participation in society must be supported by the ability to take proper advantage of opportunities and the freedom to exercise equal access to available options. This requires effective occupational skills, conductive personal presentation and social abilities — developmental factors that are emphasized at LVTI.

The population of the service area of LVTI consists mostly of economically disadvantaged rural Hispanics and Anglo families whose principal livelihood comes from small scale agricultural produce and a smattering of animal husbandry. Due to this high concentration of Hispanics, LVTI has established itself as a minority academic institution.

Total population and Hispanic population percentages for its immediate four-county service area are:

COUNTY TOTAL	POPULATION TOTAL	HISPANIC TOTAL	PERCENTAGE TOTAL
Colfax	13,700	6,481	47.4%
Guadalupe	4,480	3,716	82.9%
Mora	4,218	3,640	86.6%
San Miguel	22,800	18,524	81.5%

Because of the sparsely populated nature of the service area, the Institute must make an aggressive effort to market its programs, bring the students onto the institution, and keep these students once they have registered. This is a multi-dimensional challenge in magnitude since the people are both poverty ridden and uninformed. The people have had little or no opportunity to take advantage of educational and occupational opportunities in contemporary society. The majority have lived in virtual isolation and have had limited contact with the majority systems of this country. They have not had access to the job markets in the more highly developed areas, even when they have been willing to migrate, because they are not prepared vocationally, socially or emotionally to work outside of sparse livestock ranching, related farm activities and some small-scale mining and family-operated business ventures.

Yet this area, which has often been characterized as the "Appalachia of the Southwest," depends almost totally on the educational, training and placement services of the institution, in order to break the spiraling cycles of poverty, depression and ignorance which keep them captive. Luna Vocational Technical Institute extends beyond its immediate service area to serve 12 public school districts in 6 counties in this quadrant of the state, plus a number of students who come on their own from other parts of New Mexico and out of the state.

New Mexico has a much higher percentage of people living in poverty than the nation as a whole. The percentage is 17.3% for the state over 12.1% percent for the country. And the minority and disadvantaged groups have a much higher level of poverty than Whites.

Two of the counties served by LVTI, San Miguel and Mora, have the highest rate of welfare dependence and the lowest per capita income in the State of New Mexico. This makes them predominantly low on national comparisons. The other counties lying within the institution's service area do not fare much better. Unemployment and poverty, low skill preparation and drastic under achievement in school, low levels of aspiration and traditional dependence, all combine to keep these people at the lower, least fringes of society.

Mora has been ranked as the third poorest county in the United States with an official unemployment rate of 37.6%. The average unemployment rate for the four counties lying in the Institute's service area is 20.1%. Most residents would argue, however, that the unemployment rates are much higher.

Many cope with lack of employment by migrating to outlying areas where they expect to fare better and survive economically. But being poorly prepared to make this critical transition, they only encounter other societal ills which create further problems for them.

The mining industry which provided some employment opportunities for many northern New Mexicans has been hit especially hard during the past eight years. Uranium mining in Grants, New Mexico has lost 7,000 mine-related jobs to the big slump in mining activity since 1980. Other mines in the northern counties of Colfax, Taos, San Juan, and Santa Fe have been similarly affected. Declining oil extraction activities in other areas of New Mexico have likewise created unemployment and many other socio-economic problems for the citizenry.

During the past ten years LVTI has made an accelerated effort to address the growing employment needs of private industry, particularly those involving high technology. Most of those jobs, however, are developing in the larger urban areas away from the Institute's service area. In an attempt to train and prepare students to fill those new positions, the Institute makes periodic programmatic and curricular adjustments accordingly. LVTI and other post-secondary institutions carry out occasional efforts to address education, training and placement as it relates to high technology; however, there is a need for an enhanced continuation of these efforts as well as complete coordination and articulation among all the post-secondary institutions in New Mexico. This coordination is also needed to prevent unnecessary duplication of effort which might now exist.

LVTI is fully accredited through the North Central Association of Community Colleges and Schools. Besides certificates, the Institute now offers two-year Associate in Applied Science Degrees, including some in the high technology field. These are Drafting and Design Technology and Electronics. LVTI is also a member of the National Coalition of Advanced Technology Centers for two-year schools and community colleges. The Institute, New Mexico's only member of this prestigious group, was inducted into membership at its annual conference in June 1989.

II. ENVIRONMENTAL RESTORATION TECHNOLOGY

LVTI has now undertaken new efforts to address the growing national concern of handling, managing and disposing of hazardous chemical and nuclear materials. As the demand for people with specialized skills to work in this area increases, the Institute is planning to establish an Associate in Applied Science Degree to train technicians in Environmental Restoration Technology. The degree will offer two concentrations of specialized training: (1) Hazardous Materials Management Technician and (2) Robotics/Automated Systems Technician.

A. **Primary Goal**

The primary goal of this AAS Degree in Environmental Restoration Technology will be: (1) to educate, train and prepare technicians in all aspects of handling and managing chemical and nuclear materials and (2) to address the needs of industry in the government and private sectors of this country.

B. **Objectives of Project**

The objectives of the project will be to:

1. Address the growing national concern and need to train technicians to work in hazardous chemical, nuclear and technical automated environments by establishing the **Associate in Applied Science Degree: Environmental Restoration Technology.**
2. Offer the **Environmental Restoration Technology Degree: Hazardous Materials Management Technician** Concentration, to address one specific area of handling chemicals and other hazardous waste materials.
3. Offer the **Environmental Restoration Technology Degree: Robotics/Automated Systems Technician** Concentration, to address the needs of manufacturing and the handling of chemicals and other hazardous waste materials with Robotics and Automated Systems.

C. Needs Assessment

Associate in Applied Science: Environmental Restoration Technology

The AAS Degree in Environmental Restoration Technology will be designed and implemented to address the complete needs of individuals, and more specifically, technicians who work in hazardous environments where toxic chemicals and other hazardous materials are handled on a routinely daily basis. Recently passed federal and state legislation related to hazardous and waste management, as well as mounting public concern, has brought this critical need to the forefront of national attention.

Across the United States there is a projected 6.5% increase in the demand for trained and qualified workers to work in the field of hazardous materials. Other data complied by Occupational Forecasting, Inc., reveals that 300,000 Hazardous Materials Technicians will be required in this year's (1990) job market.

In the area of robotics and automated systems, there were about 4,000 robots working in factories in 1984, and an estimated 150,000 were needed by this year. A study conducted by Donald Smith for the University of Michigan and the Society of Manufacturing Engineers in 1982 established that 11,000 to 15,000 robotics technicians would by needed by 1990.

Understanding these needs and job market demands, the U.S. Department of Energy has consequently taken new initiatives to establish DOE/university partnerships to implement a variety of programs addressing graduate and advanced faculty research in environmental restoration and waste management. More recently, the partnership has extended to other academic institutions and community colleges to train and prepare technologists in this field. The new initiative and intent is to encourage young students to enter careers in this field and continue along the educational ladder through 2+2+4 articulated, cooperative partnerships.

LVTI has joined this new initiative and is now proposing the establishment of this **Associate in Applied Science Degree in Environmental Restoration Technology.** The following will provide an address to the structure of this proposed degree as well as other information pertinent to program planning, articulation among post-secondary institutions and technology transfer among government facilities and private industry.

1. **Environmental Restoration Technology: Hazardous Materials Management Technician**

   The two-year program in "hazardous materials management" will go beyond preparing technicians to handle chemical and nuclear materials. It will also serve as a preparatory program for students to continue their education in four-year degrees and advanced graduate study. The curriculum and program will prepare students in the following:

a. Training: Students will be trained in all aspects of handling and managing nuclear materials.

b. Learning: Students will acquire knowledge about federal regulations required in the areas of handling and managing chemical and nuclear materials. The knowledge will also extend to certain aspects of biology, chemistry, engineering and physics, industrial hygiene and health, physics, legal aspects, personal and industrial ethics, communications and computation skills, safety and occupational, health, public relations, and a substantial amount of field work.

c. Curriculum: The curriculum will address:

- Introduction of Hazardous Wastes
- Industrial Hygiene in Hazardous Wastes
- Environmental Regulations
- Sampling Techniques
- Properties of Hazardous Materials
- Environmental Project Development
- Risk Assessment
- Environment Treatment Methods
- Biological, Chemical and Hazardous Materials

d. Learning Laboratory/Work Environment: The program will train students in the multi-faceted needs of industry, related to environmental restoration. They will work in problem solving laboratory and work environments experimenting with specific chemical, hazardous and other types of waste products required to establish clear understandings of those federal regulations that govern them.

e. Certification: Individuals will be trained and prepared to receive certification in specified areas. This can include: asbestos removal; medical laboratory inspection; recovery, incineration, and disposal of hazardous materials; air, land and water pathway inspection; and other types of technical analyses.

f. Placement: Graduates completing the program will be eligible for employment in entry-level positions as junior or beginning technicians. Two-year graduates will also be encouraged to pursue complete four-year degree programs and other advanced degrees and/or professional upgrading opportunities. Those who simply want to enter the work force after completing the two-year degree will not be discouraged for doing so. Job placement will concentrate in:

- Private Industry

- Government Industry
- Regulatory Agencies
- Environmental Contractors
- Environmental Labs
- Environmental Consultants
- Public Service Agencies, i.e. Fire and Police Departments, Hospitals, etc.
- The General Public

2. Environmental Restoration Technology:

Robotics/Automated Systems Technician

The two-year degree program in Environmental Restoration Technology will also prepare technicians in the area of "robotics" and "automated systems."

This program will serve as a preparatory program for students and technicians who plan to continue their education in four-year degree programs, advanced graduate study, and other career upgrading opportunities. The curriculum and program will prepare students in the following:

a. Training: This degree concentration will address a two-fold career training approach: (1) To prepare technicians for the implementation, maintenance, and continued operation of robots and automated systems in industrial manufacturing, and (2) To prepare technicians to operate robotics and other automated systems in the handling and management of nuclear materials and other types of hazardous waste.

b. Learning: Students will acquire knowledge about federal regulations required in the areas of handling and managing chemical and nuclear materials. They will also learn the safety standards and practices required in operating robotics and automated systems in industry.

Students will prepare for technician positions in the industrial manufacturing by learning: large and small parts assembly; parts sorting; a range of manufacturing activities including welding, grinding, cutting, trimming, coating, spray-painting, buffing, and soldering; inspection and testing activities; and others.

c. Curriculum: The curriculum design will address courses that are common to training technicians in advanced-technology fields. It will include courses in math, science, communications, fundamentals of electricity and electronics, electro mechanical devices, mechanical devices and systems, instrumentation and control, and computers.

The curriculum will address the following six specialty areas:

- Fundamentals of Robotics and Automated Systems
- Controllers for Robots and Automated

Systems

- Automated Systems and Support Components
- Robotics/Automated Systems Interfaces
- Robotics/Automated Systems at Work
- Automated Work Cell Integration

d. Learning Laboratory/Working Environment: The program will train students in the needs of industry and government contractors, as it applies to robotics and automated manufacturing systems. These experiences will be gained through learning laboratory experiments involving manufacturing and handling of hazardous materials and nuclear waste.

e. Certification: After their educational training is completed, graduates will receive specific certification in addition to their AAS Degree. Certification will address robotics and automated systems in the manufacturing workplace and in the handling of hazardous materials and nuclear waste.

f. Placement: Graduates completing the program will be eligible for employment as manufacturing technicians and as robotics and automated systems operators. Graduates will be encouraged to pursue four-year degrees and advanced graduate degrees related to their employment. This can include manufacturing and robotics, engineering, robotics marketing, instruction and training, etc. Entry jobs with a two-year degree will concentrate in:

- Private Manufacturing
- Government Industry
- Environmental Contractors
- Research and Development
- Environmental Laboratories
- Licensing and Regulatory Agencies

III. PROGRAM PLANNING, DESIGNING AND ARTICULATION

In planning, designing, and implementing the Associate in Applied Science Degree: Environmental Restoration Technology, Luna Vocational Technical Institute will enter articulation and other cooperative agreements with a four-year college, two national laboratories, and members from the private industrial and high technology sectors.

A. New Mexico Institute of Mining and Technology (New Mexico Tech)

LVTI has received support and endorsement from the New Mexico Institute of Mining and Technology (New Mexico Tech) to assist in the planning and program design of the AAS Degree in Environmental Restoration Technology and the two concentrations in (1) Hazardous Materials Management Technician and (2) Robotics/Automated Systems Technician.

These two institutions will subsequently enter an articulation agreement which will allow for joint curriculum planning and ensure the transferability of courses and the AAS Degree from LVTI to New Mexico Tech.

B. Los Alamos National Laboratory (LANL) AND SANDIA NATIONAL LABORATORY (SANDIA)

LVTI has also received support and planning/implementation commitments from the two national scientific laboratories located in New Mexico. LANL will assist primarily in the area of Environmental Restoration Technology and Sandia will assist in Robotics/Automated Systems. Their support will address the following:

- Identification and development of job markets for program graduates/technicians.
- Participation in a "Environmental Restoration Technology Advisory Committee" to address curriculum, related issues and further program planning.
- Instructional and training support during the initial "start-up" phase of the program.
- Donation of surplus equipment that can be used in the instructional laboratories.
- Continuing technical consultant assistance.
- Assistance in establishing cooperative education programs for students, i.e., internships, workstudy programs, summer employment, etc.

C. Center for Occupational Research and Development (CORD)

The Center for Occupational Research and Development has been one of the national front-runners in providing technical assistance in planning and curriculum development in areas of advanced vocational and technical education. CORD has assisted LVTI in this area during the past three years, and will again play a major role in developing the curriculum design in this new degree program.

D. High Technology Industries

During the past five years, LVTI has established various linkages and working cooperative efforts with major technology industries, in addition to the two national laboratories. The Engineering Technologies Advisory Committee has been especially helpful in providing program planning and direction within the LVTI Technologies Department. These industrial and high technology organizations will again be requested to form a **Environmental Restoration Technology Advisory Committee.** Current members of the Engineering Technologies Advisory Committee are:

- Kirtland Air Force Base
- White Sands Missile Range
- Science and Technology Commission, State of New Mexico
- Los Alamos National Laboratory
- Digital Equipment Corporation
- Clear-Sight Cable Television
- Jim Franken Construction Industries
- Public Service Company of New Mexico
- Rowland & Partners (Architects)
- Territorial Abstract & Title Company
- Montaña de Fibra
- L & M Technologies

IV. TECHNOLOGY TRANSFER

The issue of "technology transfer" will be addressed by LVTI on a continuing basis. This will be carried out in cooperation with the Environmental Restoration Advisory Committee, the private industrial sector, and governmental agencies. Technology transfer will be addressed as follows:

1. Determine the employment needs of the government labs and other agencies at the national level.
2. Determine the employment needs of private industry at the regional level.
3. LVTI will enter cooperative agreements addressing technology transfer with these government and private sector groups.
4. Other outreach activities and a strong student recruitment effort will be carried out by LVTI to ensure a successful technology transfer effort.

BUDGET
ENVIRONMENTAL RESTORATION TECHNOLOGY
LUNA VOCATIONAL TECHNICAL INSTITUTE

ITEM	COST
Facility Renovation	
Laboratories	600,000
Classrooms	30,000
Equipment Acquisitions	1,420,000
Faculty Orientation	30,000
Faculty Salaries	200,000
Fringe Benefits	50,000
Secretarial Salary	20,000
Fringe Benefits	5,000
Curriculum Design	175,000
Student Recruitment	40,000
Travel	20,000
Coordinator	50,000
Transferability of Credits	50,000
Endowment	300,000
GRAND TOTAL	$2,990,000

BUDGET
ENVIRONMENTAL RESTORATION TECHNOLOGY
LUNA VOCATIONAL TECHNICAL INSTITUTE

ITEM	ROBOTICS	HAZARDOUS MATERIALS	
Facility Renovation			
Laboratories	100,000	500,000	
Classrooms	10,000	20,000	
Equipment Acquisitions	800,000	620,000	
Faculty Orientation	10,000	20,000	
Faculty Salaries	80,000	120,000	
Fringe Benefits	20,000	30,000	
Secretarial Salary	10,000	10,000	
Fringe Benefits	2,500	2,500	
Curriculum Design	75,000	100,000	
Student Recruitment	20,000	20,000	
Travel	10,000	10,000	
Coordinator	25,000	25,000	
Transferability of Credits	25,000	25,000	
Endowment	150,000	150,000	
TOTALS	1,337,500	1,652,500	
GRAND TOTAL			**$2,990,000**

Mr. Bevill. That was a very good presentation.

Mr. Myers?

Mr. Myers. Today we hope we will never need nuclear weapons, but as you mentioned in closing, we do need to continue the research because—though we hope it never happens—we might need them sometime in the future.

Second, there is a great civilian peacetime application for many of the materials in nuclear medicine and fuels. The labs do other work besides weapons. We do need to keep them.

Mr. Richardson. That is true. I am pleased to hear you say that, Mr. Myers. People think of the labs producing nuclear weapons. They do environmental science, nuclear medicine, drug related weapons research. They are into a lot of exciting things.

I have, Mr. Myers, in my district in the Los Alamos Laboratory the largest concentration of Ph.D.'s of any county in the country. I have approximately 4,000 Ph.D.'s. This county is so smart.

Mr. Myers. With regard to those Ph.D.'s, you all remember Earl Butz from years ago. He had a bunch of Ph.D.'s out in Indiana and somebody said, "Are they all doctors," and he said, "Yes, but they are not the kind who help you any."

Mr. Richardson. Thank you.

Wednesday, April 4, 1990.

NEBRASKA PROJECTS

WITNESSES

HON. DOUG BEREUTER'S REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEBRASKA

ART VOLK, MISSOURI RIVER BANK STABILIZATION ASSOCIATION

DANIEL CURRY, VICE PRESIDENT, MISSOURI RIVER BANK STABILIZATION ASSOCIATION

Mr. Bevill. I need to be on the floor in just a few minutes.

Mrs. Smith, would you come over and preside while I am gone?

Mrs. Smith [presiding]. Thank you.

Welcome Doug, welcome all of you at the table. Proceed with your testimony.

Mr. Bereuter. Thank you, my colleague, Mrs. Smith, and Congressman Myers. Thank you again for all the past work that you do so effectively for the country.

You have been generous in helping us with some problems across the State of Nebraska. Many of these projects are projects that affect all parts of our state. The information that you help provide for the country, the kind of flood protection that you provide through the authorizations and then most importantly the appropriations that implement them have been very important.

I have, as you will find, a record of supporting the appropriations of this subcommittee. So thank you for the opportunity to appear before you today.

I want to talk basically about a continuation of some existing efforts in the State of Nebraska, some of which effect exclusively my district and others that affect the whole state. I have a statement of support for the Missouri River Recreation River Project. These two gentlemen are here with me for that reason, the Missouri River Mitigation Project, which is a four-state effort.

Madam Chairman, I am submitting a statement from 10 Members of Congress supporting that effort from Missouri, Kansas, Iowa and Nebraska.

Mrs. SMITH. That will be in the record.

Mr. BEREUTER. The Ogallala Aquifer R&D Program is familiar to Mrs. Smith.

I begin by reiterating my continued support for funding of the Missouri Recreation River Project, also known as the Missouri River Bank Stabilization Project.

I have appeared before this subcommittee many times to support funding for this unique project which combines the efforts of the United States Army Corps of Engineers and the Department of Interior. Although the uniqueness of the project has been a strength in concept, it has also apparently proven to be a particular problem for funding and implementation purposes.

The project presents an opportunity to preserve the unusual recreational potential of a portion of the last remaining unchannelled segment, from Yankton, South Dakota, to Ponca, Nebraska, of the Missouri River below the Mainstream Pick-Sloan Dams. It also addresses a serious problem in protecting the river banks from the extraordinary and excessive erosion rates caused by the sporadic and varying releases from the Gavins Point Dam.

Although the Federal Government has no intention of admitting it, these excessive erosion rates are primarily a result of construction of the mainstream reservoirs above this section of the river. Thus, there is justification for continuing Federal assistance to mitigate the effects of such erosion.

Last year the subcommittee demonstrated its belief in and support for this project by appropriating $620,000 for construction and $100,000 for operation and maintenance. Your past support is much appreciated.

This year the grassroots support group, The Missouri River Bank Stabilization Committee, represented today by Mr. Darrel Curry from Newcaster, Nebraska, and Mr. Art Volk from South Dakota, represented by Congressman Tim Johnson, which supported this project throughout the years is recommending a funding level of $200,000 for operation and maintenance and $1,060,000 for construction during fiscal year 1991.

These funds would be used to provide for construction of bank stabilization structures, acquisition of scenic easements, acquisition and development of public access sites, provision of wildlife habitat development for endangered species, and planning funds for transfer to the Department of Interior to allow them to reevaluate the management plan and develop additional plans along this corridor of the Missouri River.

I would like to intervene in my testimony and have these two gentlemen speak to you.

Mr. VOLK. I am a member of the Missouri River Bank Stabilization Association. It is good to appear before you again this year. I was here a couple of years ago when your people won the national championship, Mr. Myers.

Congressman Bereuter has refreshed your memory a little about the area. We have a 50-mile segment of the Missouri River from Yankton to Ponca that is not channellized by any method. It runs wild. It is designated by Congress as a national river. We are here to request funding for this Missouri River Recreational Project. It was authorized under Section 707 under Public Law 625. We request that the funding be included in the budget for Fiscal Year 1991.

At the time the project was authorized, its costs were to be expended over a period of years and was identified as $21 million. For fiscal year 1991, as Congressman Bereuter suggests, we would like to have $1,060,000 for construction as well as $200,000 for operation and maintenance of the works already completed along this reach of the river under Section 32 of the Stream Bank Control and Demonstration Act, which expired in 1983. The expenditures today will provide as many new access points to the river. It includes some waterfront improvement and development and stream bank protection. Additional expenditures of these types are contemplated.

In conclusion, we want to thank you again for the opportunity to appear.

Mrs. SMITH. Thank you for being here.

Mr. CURRY. I have two letters from our state Senators, Elroy M. Hefner and Gerald Conray. I ask that they be made a part of the record.

Mrs. SMITH. They will be included in the record.

Mr. BEREUTER. Madam Chairman, briefly with respect to the Four-State Project, I would urge subcommittee support of the $429,000 funding level as contained in the President's Fiscal Year 1991 budget for fish and wildlife mitigation of the Missouri River Bank Stabilization and Navigation Project (Section 601 of P.L. 99-662).

I would ask, however, that the appropriation language provide that the Corps of Engineers be directed to initiate acquisition of real estate required for the project using any funds not needed for completion of planning and design activities. If additional funds are appropriated for the project, they could be used effectively.

Initial priority projects have an estimated cost of nearly $8 million. The Nebraska Game and Parks Commission has selected a site south of Nebraska City in my congressional district as their first priority for mitigation funds.

As you know, the Missouri River Mitigation authorization allows nearly $54 million to be spent by the Corps in the four states, Nebraska, Missouri, Iowa and Kansas, to restore fish and wildlife habitat which was lost due to the federally constructed Channel and Bank Stabilization Project on the Missouri River.

The four states are united in this effort to mitigate damage to wildlife habitat and river-related recreation on this 732-mile stretch of the Missouri River. I am pleased to submit for the record a letter from Congressional Representatives of the four states who join me in support of this program and the necessary appropriation for fiscal year 1991.

I know that time is short, so I will end with the Section 205 Small Flood Control Program and Section 14 Emergency Bank Protection Program. Both Section 205 and 14 are extremely important in my district as they are in many parts of the country.

Finally, I would once again emphasize the importance of the Section 205 Small Flood Control Program and the Section 14 Emergency Bank Protection Program to communities that I represent in Eastern Nebraska.

The Section 205 Reconnaissance Study of Antelope Creek through the City of Lincoln is, for example, being completed now. Funds will be needed in fiscal year 1991 to complete the Feasibility Study for this project and for the Salt Creek Flood Study. The Salt Creek Flood Control Project was originally authorized by Congress in 1958 and construction completed in 1968. In 1986, the City of Lincoln adopted a revised Flood Insurance Study which surprisingly showed that the project provided protection for less than a 50-year frequency storm, as compared to the 100-year frequency flood protection originally expected to be provided. Improving the level of flood protection and restoring structural stability to the system is vital to Lincoln, a city of 190,000 people.

I would request support for the use of Section 205 funds for completion of reconnaissance studies of Dead Man's Run and Beal Slough which are also located in Lincoln, Nebraska. Updated flood insurance studies of the Dead Man's Run drainage area in Lincoln showed that major residential areas would be subject to flooding in a 100-year frequency storm.

Previous studies had not shown vulnerability of this area to flooding. The Beal Slough area is undergoing rapid transformation from rural to urban land use, and concern has been expressed that a downstream development may be threatened by increased flood risk. Reconnaissance studies for both of these areas will be need in fiscal year 1991.

I ask that my entire statement be made a part of the record.

[The statements of Hon. Doug Bereuter and others follow:]

TESTIMONY BY
HONORABLE DOUG BEREUTER
BEFORE THE
HOUSE SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
APRIL 4, 1990

Mr. Chairman and Members of the Subcommittee: Thank you for the opportunity to appear before your subcommittee to request funding for several projects and programs of interest to my constituents and citizens of Nebraska. These include: The Missouri National Recreation River Project, the Missouri River Mitigation Project, Ogallala Aquifer Research and Development Program, and several Section 105 Small Flood Control Projects affecting my Congressional District and citizens of Nebraska.

1. Missouri Recreation River Project

I begin by reiterating my continued support for funding of the Missouri Recreation River Project, also known as the Missouri River Bank Stabilization Project. I have appeared before this Subcommittee many times to support funding for this unique project which combines the efforts of the U. S. Army Corps of Engineers and the Department of Interior. Although the uniqueness of the project has been a strength in concept, it has also apparently proven to be a particular problem for funding and implementation purposes.

The project presents an opportunity to preserve the unusual recreational potential of a portion of the last remaining unchannelled segment (from Yankton, South Dakota to Ponca, Nebraska) of the Missouri River below the Mainstem Pick-Sloan dams. It also addresses a serious problem in protecting the river banks from the extraordinary and excessive erosion rates caused by the sporadic and varying releases from the Gavins Point Dam. Although the Federal government has no intention of admitting it, these excessive erosion rates are primarily a result of construction of the mainstream reservoirs above this section of the river. Thus, there is justification for continuing Federal assistance to mitigate the effects of such erosion.

Last year the Subcommittee demonstrated its belief in and support for this project by appropriating $620,000 for general construction and $100,000 for operation and maintenance. Your past support is much appreciated. This year the grassroots support group, The Missouri River Bank Stabilization Committee (represented today by Mr. Darrel Curry from Newcastle, Nebraska and Mr. Art Volk from South Dakota) which has supported this project throughout the years is recommending a funding level of $200,000 for operation and maintenance and $1,060,000 for construction during FY91. These funds would be used to provide for construction of bank stabilization structures, acquisition of scenic easements, acquisition and development of public access sites, provision of wildlife habitat development for endangered species, and planning funds for transfer to the Department of

Interior to allow them to re-evaluate the management plan and develop additional plans along this corridor of the Missouri River.

In consideration of this request, I ask that the original authorization of this project be examined. The original legislation provided for full Federal funding for this portion of the river which is protected under the provisions of the Wild and Scenic Rivers Act. The latest obstacle has been the retroactive application of a local cost-sharing requirement on the project -- the first ever on a river designated as a "recreation river" under the Wild and Scenic Rivers Act.

I support the philosophy of cost sharing by local political subdivisions where Federal help is given to assist the building of projects with a local or regional influence. With regard to cost sharing for local recreation sites such as ramps, parking areas and restroom facilities, local interests are not opposed to this requirement. In fact, local government units in both Nebraska and South Dakota have agreed to share in the cost of constructing some initial facilities.

With regard to the bank stabilization work that is needed to contain and preserve the natural character of the Missouri River, there should be no question that expenditures for that portion of the project are properly the responsibility of the Federal government. As I mentioned, bank erosion has occurred along this stretch of the Missouri River because of the damming of the river upstream and the uneven discharges of water from those dams. The Federal government should accept the full responsibility for that damage and contribute 100% for the bank stabilization features authorized by law.

Cost sharing, to my knowledge, has never been applied to any Wild, Scenic, or Recreation River designated under the Wild and Scenic Rivers Act. To do so is contrary to the basic intent of that law. There is no way a state or local entity can come up with the funds needed for any significant amount of bank stabilization on this 59-mile stretch of river. And, why should they for the first time on a stretch of river designated under the Wild and Scenic Rivers Act?

Mr. Chairman, I will continue my efforts to convince the Corps of Engineers and the relevant authorizing committee that they are making a big mistake in applying local cost-sharing at this stage of the process. As we we continue to pursue this objective, I hope the Subcommittee will continue to look favorably on our request today.

2. Missouri River Mitigation Project

Mr. Chairman, I would also urge that your Subcommittee support the $429,000 funding level as contained in the President's FY91 budget for fish and wildlife mitigation of the Missouri River Bank Stabilization and Navigation Project (Section 601 of P. L. 99-662). I would ask, however, that the appropriation language provide that the Corps of Engineers be directed to initiate acquisition of real estate required for the project using any funds not needed for completion of planning and design activities. If additional funds are appropriated for the project, they could be used effectively. Initial priority projects have an estimated cost of nearly

$8,000,000. The Nebraska Game and Parks Commission has selected a site south of Nebraska City in my Congressional District as their first priority for mitigation funds.

As you know, the Missouri River Mitigation authorization allows nearly $54 million to be spent by the Corps in the four states (Nebraska, Missouri, Iowa and Kansas), to restore fish and wildlife habitat which was lost due to the federally constructed channel and bank stabilization project on the Missouri River. The four states are united in this effort to mitigate damage to wildlife habitat and river-related recreation on this 732-mile stretch of the Missouri River. I am pleased to submit for the record a letter from Congressional representatives of the four states who join me in support of this program and the necessary appropriation for FY1991.

3. Ogallala Aquifer Research and Development Program

I would also like to support the inclusion of funds to begin an Ogallala Aquifer Research and Development Program as authorized in Section 1121 of Public Law 99-662 of the Water Resources Research Act which is designed to assist the High Plains States reclaim and manage critical supplies of groundwater. A joint effort of the Governors of the eight High Plains States, (Colorado, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas and Wyoming), acting together as the High Plains Study Council have requested a total of $8.7 million to initiate this program.

The appropriations request is based upon the authorizations contained in sections 303, 304, and 305 of Title III of PL 99-662. Sections 303 and 304 will fund new state research to find new and improved methods to use less water and to better manage and develop available water supplies. At least 25 percent of the costs of this research must come from non-federal sources.

Section 305 provides for turning that research into action by financially assisting farmers who will sponsor demonstration projects involving irrigation technologies, soil and water conservation management systems, and the production and marketing of more efficient crops. This is also a cost-share program at the rate of at least 25 percent; grants to individual farmers from the program cannot exceed 85 percent of the demonstration costs.

The total request for this effort is $8.7 million, with the eight state total for Section 303 to be $3.33 million, Section 304 to be $1.9 million, and Section 305 to be $2.87 million for FY91. Nebraska would plan to use $550,000 for Section 303 work, $400,000 for Section 403 work, and $50,000 for Section 305 activities.

4. Section 205 Small Flood Control Program and Section 14 Emergency Bank Protection Program

Finally, I would once again emphasize the importance of the Section 205 Small Flood Control Program and the Section 14 Emergency Bank Protection Program to communities that I represent in Eastern Nebraska. The Section

205 Reconnaissance Study of Antelope Creek through the City of Lincoln is, for example, being completed now. Funds will be needed in FY91 to complete the Feasibility Study for this project and for the Salt Creek Flood Study. The Salt Creek Flood Control Project was originally authorized by Congress in 1958 and construction completed in 1968. In 1986 the City of Lincoln adopted a revised Flood Insurance Study which surprisingly showed that the project provided protection for less than a 50-year frequency storm, as compared to the 100-year frequency flood protection originally expected to be provided. Improving the level of flood protection and restoring structural stability to the system is vital to Lincoln, a city of 190,000 people

I would request support for the use of Section 205 funds for completion of Reconnaissance Studies of Dead Man's Run and Beal Slough which are also located in Lincoln, Nebraska. Updated flood insurance studies of the Dead Man's Run drainage area in Lincoln showed that major residential areas would be subject to flooding in a 100-year frequency storm. Previous studies had not shown vulnerability of this area to flooding. The Beal Slough area is undergoing rapid transformation from rural to urban land use, and concern has been expressed that a downstream development may be threatened by increased flood risk. Reconnaissance Studies for both of these areas will be needed in FY91.

Thank you Mr. Chairman, for this opportunity to speak on behalf of these projects which are important to Nebraska and the First Congressional District.

Congress of the United States
House of Representatives
Washington, D.C. 20515

April 1, 1990

The Honorable Tom Bevill, Chairman
Subcommittee on Energy and
Water Development
Committee on Appropriations
2362 Rayburn Office Building
Washington, D.C. 20515

Honorable John T. Myers
Ranking Minority
Subcommittee on Energy and
Water Development
Committee on Appropriations
2362 Rayburn Office Building
Washington, D.C. 20515

Dear Colleagues:

On behalf of the states of Nebraska, Iowa, Kansas and Missouri, we are writing to encourage your support for the President's proposed budget request of $429,000 for the Missouri River Mitigation Project. Section 601 of P.L. 99-662 of the Water Resources Development Act of 1986 authorized $51.9 million for Missouri River Mitigation. The project includes the four-state area of Iowa, Nebraska, Kansas and Missouri.

During the Pick-Sloan era, a well intentioned project completed by the Army Corps of Engineers stabilized the banks of the Missouri and made it navigable. An unexpected result of this project was the loss of fish and wildlife habitat which occurred when sand bars, marshes, "horseshoe" bends and side channels disappeared following completion of the project. It has been estimated that 475,000 acres of fish and wildlife habitat have been lost. The river now follows a much straighter path, and the water flows more rapidly. This causes continued deepening of the river and ever increasing loss of fish and wildlife habitat.

Furthermore, a Fish and Wildlife Coordination Act Report stated that channelization of the Missouri River directly eliminated 100,200 acres of aquatic habitat and 374,300 acres of wetland and terrestrial habitat from the natural river and its active erosion zone in the reach from Sioux City, Iowa to St. Louis, Missouri.

In 1989, Congress appropriated $300,000 for planning and design of this mitigation project. During a colloquy on the House floor in September, 1989, you responded affirmatively to a request that obligation of this $300,000 was sufficient to prevent deauthorization of the project.

The Missouri River Mitigation Project will restore small portions of lost habitat and prevent even greater habitat losses. We feel this project is consistent with national environmental and natural resource priorities. Please help to protect this important natural resource by including funding for it in FY 1991. We further ask that appropriation language direct the Corps of Engineers to initiate acquisition of real estate required for the project with any funds not needed for completion of planning and design activities.

Sincerely,

Doug Bereuter
DOUG BEREUTER, M.C.

FRED GRANDY, M.C.

IKE SKELTON, M.C.

Jim Slattery
JIM SLATTERY, M.C.

PETER HOAGLAND, M.C.

Jim Lightfoot
JIM LIGHTFOOT, M.C.

Tom Coleman
TOM COLEMAN, M.C.

Jan Meyers
JAN MEYERS, M.C.

Harold L. Volkmer
HAROLD VOLKMER, M.C.

Jack Buechner
JACK BUECHNER, M.C.

Nebraska State Legislature

SENATOR ELROY M. HEFNER

District No. 19
Box 36, 601 Cedar
Coleridge, Nebraska 68727
Home: (402) 283-4475

Legislative Address:
State Capitol
Lincoln, Nebraska 68509
(402) 471-2624

Ninety-First Legislature

COMMITTEES

Vice Chairman, Revenue
Agriculture
Business and Labor
Legislative Council

March 27, 1990

U. S. Representative Tom Bevill, Chairman
Subcommittee on Energy & Water Development
House Committee on Appropriations
2362 Rayburn House Office Building
Washington, D.C. 20515

Dear Mr. Chairman:

I wish to go on record as being in support of the Missouri River Bank Stabilization Association's efforts to obtain funding for the National Recreation River, that 59-mile section of the Missouri River from Gavins Point near Yankton, South Dakota to Ponca State Park near Ponca, Nebraska.

Please accept this letter in lieu of my appearance before your Committee and enter it as part of the record of the proceedings in this matter.

Sincerely,

Elroy M. Hefner

Elroy M. Hefner
State Senator
19th District

EMH:es

Representing Cedar, Knox and Pierce Counties and part of Wayne County

Nebraska State Legislature

SENATOR GERALD CONWAY

District No. 17

Home Address:
1115 Lawndale Drive
Wayne, Nebraska 68787
(402) 375-4156

Legislative Address:
State Capitol
Lincoln, Nebraska 68509
(402) 471-2716

Ninety-First Legislature

COMMITTEES

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Vice Chairman, Banking, Commerce and Insurance
Vice Chairman, Intergovernmental Cooperation
Committee on Committees
Government, Military and Veterans Affairs
Legislative Council

March 27, 1990

The Honorable Tom Bevill, Chairman
Subcommittee on Energy and Water Development
House Appropriations Committee
2362 Rayburn House Office Building
Washington, D.C. 20515

Dear Mr. Chairman:

Please include this letter as part of the committee record for the hearing at which it is presented.

I represent the 17th District which is located in Northeast Nebraska. My District borders the Missouri River for approximately fifty miles and includes much of the Missouri National Recreation River Project. I have personally observed the erosion caused by the natural shift of the banks along this part of the Missouri. These unpredictable changes cause numerous problems including loss of public and private land, as well as numerous boundary disputes with Iowa.

The Missouri River Bank Stabilization Association has been instrumental in the attempt to contain the river, thereby enabling full utilization of the river and its riverfront. The Association has successfully balanced the natural beauty of the river with the demands of society.

The progress achieved by the Association, is applauded by the people of Nebraska's 17th District and myself. I would offer my unqualified support for the continued support of their effort.

Sincerely,

Gerald Conway

Gerald Conway

Statement of Jim Peterson, President and Darrel Curry, Vice President of the

MISSOURI RIVER BANK STABILIZATION ASSOCIATION

Mr. Chairman and Members of the Sub-Committee:

On behalf of the membership of the Missouri River Bank Stabilization Association, we certainly wish to thank you for this opportunity to testify before you with reference to the Fiscal Year 1991 budget. Your willingness to permit us to testify and the courtesy you continually show us is indeed appreciated.

As you know, little of the "wide Missouri" remains in its natural state. Yesterday's "wild Missouri" is today in large part tamed. The channelization projects and the erection of the six "main stem" dams have left only isolated reaches of river in anything resembling a natural state. Thanks to your involvement and foresight, one segment of the Missouri is now being protected and preserved in a more or less natural state. A year ago you demonstrated your belief in and concern for, that segment of the Missouri by recommending funding in the amount of $620,000.00 for construction and $100,000.00 for operation and maintenance. We certainly thank you for demonstrating your genuine interest in so tangible a manner.

We are here to request that funding for the Missouri National Recreation River Project, authorized in 1978 under Section 707 of Public Law 95-625, **be included in the budget for FY 1991**. At the time this project was authorized, its cost (to be expended over a period of several years), was identified as $21,000,000.00. **For FY 1991, $1,060,000.00 is needed for construction as well as $200,000.00 for operation and maintenance of the works already completed along this reach of the river** under Section 32 Streambank Control and Demonstration Act, an Act which expired in 1983.

Expenditures under the current law have provided new access points to the river, waterfront improvement and development, and some streambank protection. Additional expenditures on these types of improvements are contemplated.

To refresh your memory, this project covers the fifty-nine (59) mile reach of the Missouri lying downstream of the Gavins Point Dam, near Yankton, South Dakota. The Ponca State Park, near Ponca, Nebraska lies at the lower end of this reach. This is the sole remaining segment of the Missouri below Gavins Point Dam, that is neither channelized for navigation or inundated by any of the lakes formed by the damming of the Missouri. Here, the Missouri occupies its "old" valley, unchanged by the most recent period of glaciation. This valley is considerably wider than the "new" valley extending upstream of Yankton, South Dakota, and the loose, fertile soil of its broad floodplain is easily eroded. Unchecked, the Missouri wanders at will, devouring its shoreline in a frighteningly casual way. The problem is compounded by the varying releases of water at the Gavins Point Dam. Those releases are determined by numerous, often unpredictable, factors such as navigation needs, the demand for hydro-electric power, efforts to protect endangered species, (such as the least tern and the piping plover), the need for flood control, and the demand for drinking water. In consequence, the unprotected soil of the floodplain is under almost constant attack. The River and its corridor is that which we seek to protect and preserve.

Continued funding for this project will enable the Corps of Engineers to pursue its work to contain the River and protect the investment of some $6,000,000.00 of work already completed. **We firmly believe that financial responsibility for this falls to the federal government because this is, after all, *a National River*,** so designated by Congress.

In conclusion, we again thank you for this opportunity to appear before this sub-committee and for the consideration you have shown for those farmers, outdoorsmen, environmentalists, and others who make up the Missouri River Bank Stabilization Association.

We would be happy to try to answer any questions you might have.

Thank you.

Nebraska Game and Parks Commission
2200 North 33rd Street / P.O. Box 30370 / Lincoln, Nebraska 68503

March 27, 1990

The Honorable Tom Bevill, Chairman
Subcommittee on Energy and Water Development
Senate Committee on Appropriations
2362 Rayburn House Office Building
Washington DC 20515

Dear Congressman Bevill:

Please accept fifteen copies of this letter for the written record as the testimony of the Nebraska Game and Parks Commission for consideration by the Subcommittee on Energy and Water Development.

We support the $429,000 funding level contained in the President's 1991 Budget for Fish and Wildlife Mitigation of the Missouri River Bank Stabilization and Navigation Project. We ask that the appropriation language provide that the U.S. Army Corps of Engineers be directed to initiate acquisition of real estate required for the project using any funds not needed for completion of planning and design activities. If additional funds are appropriated for the project, they could be used effectively. Priority projects proposed by the four state wildlife agencies for project initiation have an estimated cost approaching $8,000,000.

A second project appropriation of concern to our agency is the Missouri National Recreation River. According to our understanding of the funding request, it is intended to be used largely for maintenance of previously constructed bank erosion control structures and as cost sharing for initiation of development of a park area in the vicinity of Vermillion, South Dakota. We appreciate the need for the assignment of priorities to these activities in the recent past, but encourage the subcommittee to consider the balance for which the National Recreation River concept was adopted to achieve. In order to better assure this goal we recommend a small appropriation for the specific purpose of a Department of Interior led review and updating of the ten-year old Missouri National Recreation River Master Plan. We also recommend favorable committee action for funding the Section 1135 Program of P.L. 99-662. One of the projects under consideration is a Nebraska project in the vicinity of Blair, Nebraska which would compliment the Missouri River Mitigation-project discussed above.

U.S. Army Corps of Engineers Section 22 Technical Assistance Program for state water planning is another area of direct concern to our agency and we support the level of appropriation requested. We would point out for the Subcommittee's consideration in determining cost sharing requirements for Section 22 participation

Congressman J. Bennett Johnston
March 27, 1990
Page 2

that many of the projects undertaken in Nebraska involve issues that could arguably be termed equally of federal interest. For example, we have had studies on or concerning the Missouri River, studies that will be used in administration of federal permits for discharge of dredged or fill materials and studies concerned with wetland management.

We appreciate past opportunities to participate and favor continuation of a process whereby state agencies and political subdivisions submit Section 22 proposals to the agency responsible for state water planning for final determination of priorities and schedules.

Sincerely,

Rex Amack

Rex Amack
Director

RA/GRC/dj

pc: Congresswoman Virginia Smith
Congressman Douglas Bereuter
Congressman Peter Hoagland
Governor Kay Orr
Iowa
Kansas
Missouri
South Dakota
Department of Water Resources
Natural Resources Commission
Policy Research Office
Papio-Missouri NRD
Nemaha NRD
Lower Platte South NRD
Lewis and Clark NRD
Omaha District, Corps of Engineers
Fish and Wildlife Service
National Park Service
Nebraska Game and Parks Commissioners

Mrs. SMITH. We appreciate you being here. Both Mr. Myers and Mr. Bevill had to leave for a short time.

I have some comments I want to make, but I am going to wait until my colleagues come back because I want them to hear them.

WEDNESDAY, APRIL 4, 1990.

NEBRASKA PROJECTS

WITNESSES

J. MICHAEL JESS, DIRECTOR, NEBRASKA DEPARTMENT OF NATURAL RESOURCES

CLIFFORD W. WELSH, NEBRASKA DEPARTMENT OF NATURAL RESOURCES

Mrs. SMITH. Let me turn to the next panel, Michael Jess, Director, Nebraska Department of Natural Resources, and Clifford Welsh, Nebraska Department of Natural Resources.

Your entire statement will be made a part of the record. You may proceed.

Mr. JESS. I am here to extend Governor Kay Orr's good wishes to you.

Congressman Bereuter has already talked about a couple of them so I will not be repetitious. The Missouri River mitigation is on the top of my list. That, of course, is to, as the project intended, to somewhat rectify if possible the problems of the navigation channel on the Missouri River has caused. That was certainly not an intentional thing. It happened but over the years wildlife habitat was lost because of the navigation channel. So now, the four states are coming together and they have a rather innovative plan to rectify some of those problems.

In the President's budget, there was $429,000 recommended for planning purposes to the Corps of Engineers. We would ask that the committee, when you deliberate, we don't have any exceptions to make to the money, but if there is money left after these planning efforts are completed we ask that you direct the Corps of Engineers to go ahead with acquisition of properties and other activities that their plans would indicate are necessary.

Following me will be several people talking about the next one, that is the Platte River Bank Demonstration Program. Over the years high flood waters on the Platte, of course, have caused erosion. There has been a number of investigations done and there are some rather innovating solutions that the Corps of Engineers has come up with and were recommended to the Twin Platte Natural Resources District. We ask for full funding for five-year construction, that total being $4 million.

There is sufficient non-Federal cost sharing for that through the NRD. The Missouri River Bank Stabilization Programs, you heard about earlier. I will not go into details there, suffice it to say that Governor Orr is supportive of that $1,060,000 proposal for construction and the $200,000 for the operation and maintenance that you heard about a little bit ago.

Congressman Bereuter talked about several other ongoing programs of the Corps of Engineers. I have tabulated them in my testimony that I provided to staff. I am sure you can follow along with those when the committee deliberates following the hearing.

First is the Sargent Unit. The Sargent District has come to realize that some facilities need to be replaced, improved. They are asking for a rehabilitation and betterment loan from the Bureau of Reclamation to the tune of $200,000 for fiscal year 1991. We are supportive of your funding of that proposal and we hope it does get your favorable support as well.

The Prairie Bend Unit has been in the planning stages for a number of years. They are in need of $200,000 next year for some of the last planning activities for wildlife habitat and instream flow investigations in the Platte Valley of Nebraska.

Congressman Bereuter talked about the Ogallala underground water demonstration projects. Although we do not have specific figures for you, the cost ceiling that was established several years ago is likely to be too low. So we would ask that you follow Congressman Bereuter's suggestions when those numbers do become known and raise that cost ceiling as it should be.

You should know also that one of the first demonstrations is under way in Nebraska. The York Project is nearly completed. Before the year is over, I am sure the demonstration activities there will be under way. There are several other Bureau projects. We certainly want to recognize the efforts of this committee in years past, especially last year for the North Loup Project, the Davis Creek Dam was funded by the Congress. That project was under way. I am sure many of the people in this room are very grateful that your committee took a very strong stand and helped us to get that under way.

Madam Chairman, that is all my testimony. I would certainly be willing to answer any questions that may come up today or later on.

[The statements of Mr. Jess and others follow:]

TESTIMONY

TO

CONGRESS OF THE UNITED STATES

HOUSE OF REPRESENTATIVES
APPROPRIATIONS SUBCOMMITTEE
ON
ENERGY AND WATER DEVELOPMENT

AND

SENATE
APPROPRIATIONS SUBCOMMITTEE
ON
ENERGY AND WATER DEVELOPMENT

by

J. Michael Jess
Director of Water Resources
State of Nebraska

on behalf of

Kay A. Orr
Governor
State of Nebraska

April 4, 1990

J. Michael Jess
Director of Water Resources
State of Nebraska

Mr. Chairman and committee members, I am Michael Jess, Director of Water Resources for the State of Nebraska. My testimony is given on behalf of Kay A. Orr, Governor of Nebraska. My purpose in appearing before you is to urge your support for several water resources projects and investigations needed in my state.

1. Missouri River Mitigation (Corps of Engineers)

Few question the benefits navigation on the Missouri River provides. Since completion of the navigation facilities, bulk grain shipments and other cargo have moved efficiently along the inland waterway.

Despite the well-intended efforts of its designers, inadvertent environmental problems are now evident. In Iowa, Missouri, Kansas and Nebraska, an estimated 475,000 acres of fish and wildlife habitat have been lost. Jointly, the four states and various local interests have devised innovative plans.

Governor Orr and I support the $429,000 funding level contained in the President's 1991 Budget proposal. The Corps of Engineers should be directed, however, to initiate acquisition of real estate required for the project using any funds not needed for completion of planning and design activities.

2. Platte River Bank Demonstration Program (Corps of Engineers)

For decades, water flowing in the Platte River has eroded away its soft banks. Valuable and highly productive farm land has been lost. Highways, bridges and public facilities are also adversely impacted. During the past several years, Corps' investigations have produced several innovative solutions. Speakers that follow will provide details. They will also outline expected costs over a five-year period.

I am here now to request your support. Full funding for the five-year construction program is needed. Local, non-federal support is committed to sharing in the $4.0 million federal share.

3. Missouri River Bank Stabilization (Corps of Engineers)

Since construction of the Missouri River main stem water storage facilities, substantial bank erosion has resulted following release of the water. Productive farmland and environmentally sensitive properties have been impacted adversely. The area hardest hit lies between Gavins Point Dam and Ponca, Nebraska.

Construction of needed bank stabilization facilities is needed. The Administration's proposal is too low and should be increased to $1,060,000. Necessary operation and maintenance should be increased to $200,000. Representatives from the Missouri River Bank Stabilization Association will follow me and will provide all the details.

4. Other Corps of Engineers Projects and Programs

Several other projects and programs also impact my state. Nebraska is supportive of these proposals:

Antelope Creek flood survey	$ 21,000
Boyer Chute habitat rehabilitation	900,000
Papio Creek flood control construction	2,905,000
Salt Creek flood control feasibility study	660,000
Wood River flood control survey	178,000
Section 22 planning assistance	5,000,000
Section 205 small flood control projects	30,000,000
Section 206 flood plain management services	9,000,000
National drought study	2,500,000

5. Sargent Unit (Bureau of Reclamation)

A rehabilitation and betterment loan is needed by the Sargent District for project rehabilitation and betterment activities. With project age, problems became evident. But, valuable experience in solving them has been gained. The District's proposals will permit greater efficiency in operations. For FY 91 some $200,000 is needed. Again, District spokespersons will follow and will provide the details. Their proposal has Nebraska's support.

6. Prairie Bend Unit (Bureau of Reclamation)

Nebraska is in support of your appropriating $200,000 next fiscal year. Funding would permit undertaking wildlife habitat and instream flow investigations in the Platte River valley. The Administration failed to include this important program in recommendations made to the Congress.

7. Ground Water Recharge Demonstrations (Bureau of Reclamation)

Continued efforts are essential to assure adequate ground water supplies in areas experiencing a declining water table. In many locations, ground water is practically the sole source of supply. Reliable, cost-effective methods of replenishing those supplies are essential to continued vitality.

Two demonstration projects have been selected for Nebraska. Initial construction at the York site is nearing completion. Demonstration activities are scheduled to begin soon thereafter.

We are told the current expenditure ceiling is too low. Governor Orr has instructed me to urge your raising the ceiling as will be suggested by Congressman Bereuter, the program's original sponsor.

8. Other Bureau of Reclamation Projects and Programs

Several other Bureau projects and programs contained in the President's recommendations also impact Nebraska. We support funding these programs as well:

North Loup Division construction	$ 21,600,000
O'Neill Unit investigations	600,000
Farwell Unit drainage and minor construction	460,000

Regarding the North Loup Project, if they were here, I'm sure many from my state would acknowledge their gratitude to this committee for last year's support of the Davis Creek Dam.

Mr. Chairman, thank you for past support of these and other activities. I also appreciate the opportunity to present Nebraska's testimony. Should questions arise, please direct them to me.

STATEMENT OF
THE NEBRASKA NATURAL RESOURCES COMMISSION
PRESENTED TO
THE SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
OF
THE HOUSE APPROPRIATIONS COMMITTEE

ON
APRIL 4, 1990
ROOM 2362 RAYBURN BUILDING
WASHINGTON D.C.

The Nebraska Natural Resources Commission sincerely appreciates this opportunity to present its priorities and recommendations concerning federal projects and programs. The Commission has the responsibility to plan, develop and encourage the implementation of a comprehensive program of resource development, conservation and utilization of the soil and water resources of the state. The following comments are focused on the planning and construction activities involving the Corps of Engineers and the Bureau of Reclamation most directly related to this agency. While the Commission certainly has an interest in other projects and activities being carried out by these two Federal agencies within Nebraska, an inclusive list of that activity can be found in the testimony presented on behalf of the Governor of the State of Nebraska, the Honorable Kay Orr.

A number of the funding requests listed below reflect national totals. Nebraska is dependent on an allocation of equitable shares for each of the programs. In the interest of brevity, the following summary of our request is provided.

FISCAL YEAR 1991 BUDGET RECOMMENDATIONS

AGENCY	PROGRAM OR ACTIVITY	NATIONAL ALLOCATION	NEBRASKA ALLOCATION
Corps of Engineers	Section 22	$5.0 M	$300.0 T
Corps of Engineers	Flood Plain Management Services	$9.0 M	-----
Corps of Engineers	Drought Study	$2.5 M	____
Corps of Engineers	Section 205	$30.0 M	____
Corps of Engineers	Missouri River Mitigation Funding	$429.0 T	
Bureau of Reclamation	Groundwater Recharge Demonstration Program	$4.5 M	$376.7 T
Bureau of Reclamation	O'Neill Unit Alternatives Study	____	$600.0 T
High Plains Study Council		$8.7 M	$1.0 M

SECTION 22

The Planning Assistance to States budget, proposed by the Administration, included $4.5 million for Section 22 studies. The budget request was accompanied by a provision to cost-share services with nonfederal sponsors on a graduated scale beginning with 10% in FY 91, increasing to 30% in FY 92 and topping at 50% in FY 93.

The Nebraska Natural Resources Commission believes the cost-sharing provision is similar to the one offered by the Administration last year and rejected by the House Subcommittee on Energy and Water Development as contrary to law. As the House Committee Report (H. Report 101-96) indicated last year, the costs of developing and maintaining separate cost-sharing agreements for each individual study would outweigh the benefits of increased revenues from local sponsors. For example, in Nebraska, Section 22 funds have been allocated for the following activities during the current fiscal year: analysis of instream values of Missouri River reservoir releases; Missouri river corridor study backwater plans; rainwater basin models; and an initial investigation of Middle Loup bank erosion problems for study design. This year, the Missouri River and Middle Loup River studies will be completed and new planning studies started on the Platte and other rivers. Several state and a number of local agencies have a direct interest in each of these activities. It is obvious that cost-sharing requires significant advance cooperative effort. To add a requirement of cost-sharing would eliminate the flexibility that is fundamental in this program. Furthermore, the Commission feels that if Congress truly desired cost-sharing for this program, the requirement would have been made in the Water Resources Development Act f 1986. The Commission is disturbed that the Administration continues to try to insert cost-sharing in this program.

FLOOD PLAIN MANAGEMENT SERVICES

The National budget includes $9.0 million for flood plain management services. Cost-sharing, similar to that proposed for Section 22 studies, is a recent, but unwarranted attribute proposed as part of the program. As the state flood plain management agency, we feel this is a very ill advised approach. The Nebraska Natural Resources Commission carries out flood plain delineation studies pursuant to state statute. The Nebraska effort supports and supplements the program that is federally mandated by the National Flood Insurance Program. If cost-sharing for flood plain studies is required, the Commission will expect similar consideration for the programs being carried out and funded solely by the state. Under Nebraska law, this agency is responsible for flood related technical assistance to all local governments and state and local agencies. The Corps of Engineers FPMS program has been very effective in furnishing such data to those requesting it. If there is a cost associated with the service, the result will be a serious overload of such requests being rerouted to our state agency. Under a joint working agreement with our Commission, the Soil Conservation Service also cooperates in the conduct of flood plain delineation studies, and at this point, the Commission has not had any warnings that cost-sharing will be required from that agency. The Commission asks that Congress provide positive guidance to this program, as states are very willing to collaborate and cooperate with federal counterparts, but will continue to reject cost-sharing proposals of this nature.

DROUGHT STUDY

The budget proposal includes $2.5 million to continue the second year of the National Management During Drought Study. The primary objectives of the study are to determine how water is managed during drought, to formulate alternatives, and to make recommendations for more efficient and effective drought response. Since the State of Nebraska developed a drought assessment and response plan several years ago, the Commission is interested in providing nonfederal perspectives and suggestions to the Corps of Engineers during the course of their 3 year study. Selfishly, the Commission hopes to gain a number of new ideas to improve our own response plan, and urges continued funding of the Corps of Engineers effort.

SECTION 205

The Natural Resources Commission is currently providing state cost-share funds at the level of 60% of the non-federal cost to three Section 205 projects. Construction of the Scribner Levee Project at Scribner, Nebraska, as originally planned and estimated to cost $1,736,000 is complete. However, the Corps of Engineers has determined that an additional levee will be necessary to provide 100-year flood protection to much of the community. If the City of Scribner decides to proceed with the additional levee that is estimated to cost $676,000, the continuation of state cost-share funds will be considered.

Turning to another 205 project, the Local Cooperation Agreement for the Lodgepole Creek Project at Sidney, Nebraska, has been executed and the city can now proceed with land rights acquisition. We look forward to the commencement of project construction in FY 1991. This project has a total estimated cost of $3,835,500.

In another matter, land rights acquisition is underway in the Big Papillion Creek Channel Improvement Project in Omaha, Nebraska. The Natural Resources Commission has approved $1,470,000 in state funds for this essential flood control project which has a total estimated cost of $8,000,000. The Commission supports the FY 91 request of $2,187,000 for this project and looks forward to construction to begin this calendar year.

Local sponsors have also made requests for possible state cost-share assistance for two Section 205 projects that are currently in the planning stage. These projects are Cedar Creek located along the Platte River at Cedar Creek, Nebraska, and Lower Wood River/Warm Slough at Grand Island, Nebraska. The Commission supports continued planning work by the Corps on these projects which are estimated to cost $4,600,000 and $6,000,000 respectively.

MISSOURI RIVER MITIGATION FUNDING

The Commission has cooperated fully with the Papio-Missouri River Natural Resources District, the Nebraska Game and Parks Commission, the States of Iowa, Missouri and Kansas, and the Corps of Engineers on the Missouri River mitigation plan. The Commission supports the $429,000 funding level as contained in the President's FY 91 budget for fish and wildlife mitigation of the Missouri River Bank Stabilization Project. The Commission asks that appropriation language provide that the Corps of Engineers be directed to initiate acquisition of the real estate required for the project using any funds not needed for completion of planning and design activities.

HIGH PLAINS STATES GROUNDWATER DEMONSTRATION PROGRAM

The Commission is the responsible state agency to work with the Bureau of Reclamation on the Nebraska projects of the High Plains States Groundwater Demonstration Program. The Commission anticipates the completion of two projects within the state.

The York, Nebraska project is being sponsored by the Upper Big Blue Natural Resources District. The project will demonstrate the effectiveness of natural seepage from a small reservoir and spreading basins and well injection through alluvial material to a sand and gravel aquifer that is used as both an irrigation and municipal water supply. The total cost for the project is estimated at $1.9 million, of which the sponsor's share will be $382,380. The project will be completed and in operation prior to the end of the current fiscal year.

The Wood River, Nebraska project is sponsored by the Central Platte Natural Resources District. This project will be located near the Platte river south of the town of Wood River. The project would examine the use of two infiltration ponds with surface areas of about 30 acres each, and would require the construction of a pipeline from the diversion point to the infiltration ponds. Water would be pumped from the Platte river and an adjoining sand pit at the rate of about 900 gpm for approximately 32 weeks per year. The sponsor is currently refining cost estimates and working on a wet-meadow research plan in cooperation with the Fish and Wildlife Service. It is anticipated construction of this project will be initiated during this current fiscal year, however, landowner concern over the recreation land issue associated with the proposed Prairie Bend project may cause some delay.

One of the overall issues facing the demonstration program effort is the $20.0 million authorized ceiling. Federal costs in the total program are now estimated at $27.6 million and all costs are not firm at this point. The Commission supports legislation to increase that ceiling.

O'NEILL UNIT ALTERNATIVES STUDY

This activity also falls under the ground water recharge category. During the past year, from initial observations, the Bureau of Reclamation has successfully demonstrated a number of ground water recharge techniques in the O'Neill project area. Additional work is required to complete the study and the report in FY 91. Last year the Commission understood the study would be completed during the current fiscal year, but now understand that the Bureau proposed completion during FY 91. With that in mind, the Commission supports a $600,000 appropriation to complete this study and determine the future of the O,Neill project.

OGALLALA AQUIFER RESEARCH AND DEVELOPMENT PROGRAM

At the present time, the Ogallala Aquifer Research and Development Program does not fall within either Corps of Engineers or Bureau of Reclamation activities. In short, there is not an Administration request supporting funding for the program, however, the Commission suggests strong consideration be given to funding the program for FY 91.

For background information, Section 1121 of Public Law 99-662 established within the Water Resources Research Act an important program to assist the High Plains Region reclaim and manage a critical water resource. Since passage of PL 99-662 in 1986, the United States Geological Survey has been funded under the act to monitor the Ogallala aquifer in the eight state area. During the past one and one-half years, Governors of the states of Colorado, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas and Wyoming have banded together to form the High Plains Study Council as required by law. That effort resulted in a letter signed by all eight Governors and sent to the proper Committees of Congress to express their strong support for the Ogallala recovery and management effort.

The appropriations request is based on the authorizations contained in sections 303, 304, and 305 of Title III of PL 99-662. Sections 303 and 304 will fund new state research to find new and improved methods to use less water and to better manage and develop available water supplies. At least 25 percent of the costs of this research must come from non-federal sources.

Section 305 provides for turning that research into action by financially assisting farmers who will sponsor demonstration projects involving irrigation technologies, soil and water conservation management system, and the production and marketing of more efficient crops. This is also a cost-share program at the rate of at least 25 percent and the grants to individual farmers from the program cannot exceed 85 percent of the demonstration costs.

The total request for this effort is $8.7 million, with the eight state total for Section 303 at $3.33 million, Section 304 at $1.9 million and Section 305 at $2.87 million for FY 91. Nebraska plans to utilize $550,000 for Section 303 work, $400,000 for Section 304 work, and $50,000 for section 305 activities.

The Commission requests consideration be given to funding this important program.

SUMMARY

Thank you for the opportunity to share the Commission's recommendations with the subcommittee. As noted earlier, the Commission selected key programs and projects that are of direct interest to the Nebraska Natural Resources Commission. In addition, the Commission offers unified support to the comprehensive list of Corps of Engineers and Bureau of Reclamation projects and activities presented on behalf of Governor Orr.

Lower Platte South
Natural Resources District

3125 Portia
P.O. Box 83581
Lincoln, NE 68501

402/476-2729

March 19, 1990

The Honorable Tom Bevill, Chairman
Subcommittee on Energy and Water Development
House Committee on Appropriations
2362 Rayburn House Office Building
Washington, D.C. 20510

Dear Congressman Bevill:

We are writing to convey our requests and positions on several programs and projects that have been included in the Administration's budget recommendations for the Fiscal Year 1991. The specific programs and projects of interest include several Corps of Engineers, Section 205, Small Flood Control Projects, and Missouri River Mitigation.

Section 205, Antelope Creek Flood Survey, Lincoln

The Section 205 Reconnaissance Study of Antelope Creek through Lincoln by the Army Corps of Engineers has been completed in draft form and is ready for review. We anticipate the study will demonstrate the vital need for flood control assistance and recommend a feasible solution.

The Feasibility Study Phase is expected to begin in September 1990 and be completed in 1991. We urge continued funding in the FY1991 Budget for this Feasibility Study.

Antelope Creek flows from southeast Lincoln in a northwesterly direction through an extensively developed urban area. This area contains many established residences, businesses, and public facilities, including Lincoln High School, that would be impacted by flooding along Antelope Creek. Flooding would also greatly impair the transportation network through the City. The economic and social damages from flooding in this built-up urban area along Antelope Creek would be substantial.

Section 205 Salt Creek Flood Study, Lincoln

The Section 205 Reconnaissance Study of Flood Control for Salt Creek through Lincoln has been completed and demonstrates that a feasible solution exists.

It is expected that the Feasibility Study will begin for this project in October 1990. We urge continued funding in the FY1991 Budget for this Feasibility Study.

The Salt Creek Flood Control Project was originally authorized by Congress in 1958 and completed in 1968. In 1986 the City of Lincoln adopted a revised Flood Insurance Study showing that the project provided protection from less than a 50-year frequency storm, as compared to the 100-year flood protection originally planned. A soil problem inherent in the levee system also threatens the integrity of the project. Improving the level of flood protection and restoring structural stability to the system is vital.

Section 205 Cedar Creek Flood Control Levee

The Section 205 Reconnaissance Study of Flood Control for the Village of Cedar Creek by the construction of a levee has been completed, showing a feasible solution. We urge continued funding in the FY91 Budget for the Feasibility Study for this project.

Section 205 Reconnaissance Studies of Dead Man's Run and Beal Slough, Lincoln

The recently completed draft, updated flood insurance study of the Dead Man's Run drainage in Lincoln shows major residential areas being subject to flooding from the 100-year storm which were not included as flood prone in the previous study. The City of Lincoln has requested the Corps of Engineers to conduct a Section 205 Reconnaissance Study of Dead Man's Run to see if there are any feasible solutions to reduce the flooding impact.

The City of Lincoln has also requested the Corps of Engineers to conduct a Section 205 Reconnaissance Study on flooding problems in the Beal Slough Watershed in southeast Lincoln. This area is undergoing rapid transformation from rural, agricultural land use to urbanized residential and commercial land use. The downstream portion of this watershed is already fully developed. Concern exists as to the potential downstream impacts from flooding as a result of continued upstream development.

We urge funding for these Section 205 Reconnaissance Studies of Dead Man's Run and Beal Slough in the FY91 Budget.

Missouri River Mitigation (PL99-662)

A portion of the Missouri River borders our District and is an important resource in our area. We join with the several other natural resources districts in Nebraska and with the states of Nebraska, Iowa, Kansas, and Missouri in supporting the $429,000 appropriation contained in the Administration's FY91 Budget for mitigation of fish and wildlife resources as authorized by PL99-662.

We appreciate this opportunity to convey to you our requests and recommendations of funding of various water projects of immediate impact and interest to the Lower Platte South Natural Resources District.

Sincerely yours,

JMastera

James Mastera, Chairman

JM:kjs

Mrs. **Smith**. Mr. Welsh, do you have anything to add?

Mr. **Welsh**. Briefly.

Mrs. **Smith**. Go right ahead.

Mr. **Welsh**. I am Cliff Welsh, a member of the Nebraska Natural Resources Commission. We have the responsibility to plan, develop and encourage the implementation of a comprehensive program of resource development, conservation and utilization of the soil and water resources of the state.

The following comments are focused on the planning and construction activities involving the Corps of Engineers and the Bureau of Reclamation most directly related to this agency. While the Commission certainly has an interest in other projects and activities being carried out by these two Federal agencies within Nebraska, an inclusive list of that activity can be found in the testimony presented on behalf of the Governor of the State of Nebraska, the Honorable Kay Orr.

A number of the funding requests listed below reflect national totals. Nebraska is dependent on an allocation of equitable shares for each of the programs. In the interest of brevity, the following summary of our request is provided· Corps of Engineers, Section 22, $5 million; Corps of Engineers, Flood Plain Management Services, $9 million; Corps of Engineers, Drought Study, $2.5 million; Corps of Engineers, Section 205, $30 million; Corps of Engineers, Missouri River Mitigation Funding, $429,000; Bureau of Reclamation, Groundwater Recharge Demonstration Program, $4.5 million; Bureau of Reclamation, O'Neill Unit Alternatives Study; High Plains Study Council, $8.7 million.

At the present time, the Ogallala Aquifer Research and Development Program does not fall within either Corps of Engineers or Bureau of Reclamation activities. In short, there is not an Administration request supporting funding for the program, however, the Commission suggests strong consideration be given to funding the program for fiscal year 1991.

For background information, Section 1121 of Public Law 99-662 established within the Water Resources Research Act an important program to assist the High Plains Region reclaim and manage a critical water resource.

Since passage of Public Law 99-662 in 1986, the United States Geological Survey has been funded under the act to monitor the Ogallala aquifer in the eight state area. During the past one and one-half years, governors of the states of Colorado, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas and Wyoming have banded together to form the High Plains Study Council as required by law. That effort resulted in a letter signed by all eight governors and sent to the proper committee of Congress to express their strong support for the Ogallala recovery and management effort.

The appropriations request is based on the authorizations contained in Sections 303, 304, and 305 of Title III of Public Law 99-662. Sections 303 and 304 will fund new state research to find new and improved methods to use less water and to better manage and develop available water supplies. At least 25 percent of the costs of this research must come from nonfederal sources.

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The total request for this effort is $8.7 million, with the eight state total for Section 303 at $3.33 million, Section 304 at $1.9 million and Section 305 at $2.87 million for fiscal year 1991. Nebraska plans to utilize $500,000 for Section 303 work, $400,000 for Section 304 work, and $50,000 for Section 305 activities.

The Commission requests consideration be given to funding this important program.

Thank you for the opportunity to share the Commission's recommendations with the subcommittee. As noted earlier, the Commission selected key programs and projects that are of direct interest to the Nebraska Natural Resources Commission. In addition, the Commission offers unified support to the comprehensive list of Corps of Engineers and Bureau of Reclamation projects and activities presented on behalf of Governor Orr.

Mrs. SMITH. Thank you both for being here, Mr. Jess. We appreciate very much you coming to represent the Governor. Also we appreciate very much her support of water development in Nebraska. I think water development in our state is one of the most important ongoing programs. I am very much interested in all of these programs that you talked about, including $4 million for the Platte River Bank Stabilization Project. We certainly are going to fund that the very best we can.

I am thankful we don't have a big problem with the Davis Creek Dam this year. The Administration has come around to our side and they also recommended the money.

Mr. Welsh, I am very much impressed with the work of the Natural Resources Commission in Nebraska. I like what you say about the High Plains Council and the effort to prompt other research and development on our Ogallala aquifer.

WEDNESDAY, APRIL 4, 1990.

NORTH LOUP DIVISION, PICK-SLOAN MISSOURI BASIN PROGRAM

WITNESSES

DOUGLAS E. HUGHES, SOTIA, NEBRASKA, PRESIDENT OF THE TWIN LOUPS RECLAMATION DISTRICT

DONALD E. KILDAY, PALMER, NEBRASKA, PRESIDENT OF THE TWIN LOUPS IRRIGATION DISTRICT AND VICE-PRESIDENT OF THE TWIN LOUPS RECLAMATION DISTRICT

RICHARD RUSSELL, FULLERTON, NEBRASKA, DIRECTOR OF THE TWIN LOUPS RECLAMATION DISTRICT

RAYMOND NOWAK, NORTH LOUP, NEBRASKA, DIRECTOR OF THE TWIN LOUPS RECLAMATION DISTRICT

RON WOLF, SCOTIA, NEBRASKA, MANAGER OF THE TWIN LOUPS RECLAMATION DISTRICT

MICHAEL J. SHAUGHNESSY, ST. PAUL, NEBRASKA, ONE OF THE ATTORNEYS FOR THE TWIN LOUPS RECLAMATION DISTRICT

Mrs. SMITH. Now, we will turn to the North Loup Division, Pick-Sloan Missouri Basin Program. Donald Hughes, President of the Twin Loups Reclamation District; Donald Kilday, President, of the Twin Loups Irrigation District and Vice-President of the Twin Loups Reclamation District; Richard Russell, Director of the Twin Loups Reclamation District; Raymond Nowak, Director of the Twin Loups Reclamation District; Ron Wolf, Manager of the Twin Loups Reclamation District; and Michael Shaughnessy, one of the attorneys for the Twin Loups Reclamation District.

Welcome, we are so glad to have all of you here. Your entire statements will be in the record.

Mr. KILDAY. Mrs. Smith, we have three new board members I would like to have come up at the table so that you can meet them.

Mrs. SMITH. For the record, please state your names.

Mr. RUSSELL. Richard Russell, Fullerton, Nebraska.

Mr. NOWAK. Raymond Nowak from Halerton.

Mr. WOLF. Ron Wolf from Scotia, Nebraska.

Mrs. SMITH. Thank you.

Mr. KILDAY. My name is Donald E. Kilday, of Palmer, Nebraska. With me today are three board members, Don Hughes, Dick Russell and Ray Nowak, also our manager, Ron Wolf, and our attorney, Mike Shaughnessy.

As president of the Twin Loups Irrigation District Board of Directors, I thank you and your committee for your continued support of the North Loup Division, Pick-Sloan Missouri Basin Program here in Nebraska. The President's budget requests for both fiscal years 1989 and 1990 did not include any funds to begin or continue the construction of Davis Creek Dam and its associated distribution facilities. It is only through the strong support of your committee that the Congress added sufficient funding in both 1989 and 1990 to continue construction of the North Loup Division.

I was very pleased to see that the President's fiscal year 1991 budget request of $21.646 million for the North Loup Division included funds to continue construction on all facilities of the North Loup Division. Again, this inclusion of sufficient funds to continue all phases of construction in the President's fiscal year 1991 request was certainly influenced by your committee's long term support of the project, and especially the "write-ins" over the last two consecutive fiscal years. We are hopeful that our project will be included for three more fiscal years, when we envision that all construction will be complete.

The North Loup Division construction will be about 77 percent complete by the end of fiscal year 1990. If one does not include the deferred drainage facilities which would be built in the future—when and if needed, construction at the end of fiscal year 1990 would be 81 percent complete. Water is available to 33,000 acres this year. That is 62 percent of the total of 53,000 acres with completion of the project.

On January 1, 1990, the Twin Loups Irrigation District accepted the operation and maintenance responsibility, including all the associated costs for Block I of the service area. This block includes some 23,000 acres and covers those areas served by the Mirdan and Geranium distribution systems. On January 1, 1991, the district expects to accept the operation and maintenance responsibility for Block II, which includes some 10,000 acres and covers the area served by the Scotia distribution system. This is all of the area that has been completed at this time. The district is assuming its operation and maintenance responsibilities on those systems already constructed. In 1987, our district also executed an amendment to the repayment contract whereby we agreed to nearly double our repayment obligation.

Construction on the Davis Creek Dam will be completed this fall, and the road relocation, clearing and fencing should be complete next summer. A construction contract for the Fullerton I/Elba Distribution System will be awarded in April 1990 and the contract for the Fullerton II and III distribution system is scheduled for award in June 1991. Only one major contract, the Kent Diversion Dam and Canal, would remain. As you can see, construction of the North Loup Division is rapidly nearing completion, now expected in the fall of 1993, fiscal year 1994.

Our District's Board of Directors urges your committee to approve the full $21.646 million requested by the President in fiscal year 1991 to continue construction of the North Loup Division. We need the full 53,000 acre project completed to assure an economically sound and viable project, both from the repayment standpoint, as well as the operational standpoint.

I thank you for your support.

[The statement of Donald Kilday follows:]

STATEMENT OF DONALD E. KILDAY, PALMER, NEBRASKA, IN SUPPORT OF THE NORTH LOUP DIVISION, PICK-SLOAN MISSOURI BASIN PROGRAM, NEBRASKA BEFORE THE ENERGY AND WATER DEVELOPMENT SUBCOMMITTEE ON APPROPRIATIONS OF THE UNITED STATES HOUSE OF REPRESENTATIVES

APRIL 4, 1990

Mr. Chairman and Members of the Committee:

My name is Donald E. Kilday, President of the Twin Loups Irrigation District and Vice-President of the Twin Loups Reclamation District. I live in Palmer, Nebraska. With me today is Mr. Donald E. Hughes, President of The Twin Loups Reclamation District, Richard Russell, Treasurer and Director of the Twin Loups Reclamation District, Raymond Nowak, Director of The Twin Loups Reclamation District, Ron Wolf, Manager of the Twin Loups Reclamation District and Michael J. Shaughnessy, Attorney for the Twin Loups Reclamation District. Our group appears here today in support of the continued construction of the North Loup Division, Nebraska Project.

It is my privilege, not only as the President of the Twin Loups Irrigation District, but as a farmer who will benefit from the completion of the North Loup Project, to make this Statement on behalf of the Twin Loups Reclamation District and The Twin Loups Irrigation District.

The Calamus Dam and Reservoir are complete. All contractor claims have been settled and paid. The final stage in the three-year initial filling cycle was completed in the spring of 1988, and the conservation capacity if now essentially full.

The Nebraska Game and Parks Commission has completed construction of the recreation facilities around Calamus Dam. This has resulted in $570,000 Federal and $570,000 State expenditures under the agreement. In addition, the State used $675,195 from a State Recreation Road Fund to complete roads in the recreation areas.

Fish stocking has gone on for five years, and well over six million fish have already been stocked. The Nebraska Game and Parks Commission awarded a contract in August 1987 for site planning and preliminary design development of a fish hatchery.

Mirdan Canal, Section I is complete, and all claims have been settled and paid.

Mirdan Pipe Laterals Mirdan Canal, Sections II and III, the Geranium System, and the Scotia System are complete. The O&M Headquarters Building at Scotia and the caretaker's residence at Calamus Dam are complete. The purchase of O&M equipment is continuing. Irrigation service to approximately 33,000 acres is now available.

Contracts with the Twin Loups Reclamation District for operation and maintenance during construction and minor construction on completed facilities are in place and have worked well over the past four years. These items are the Bureau of Reclamation's responsibility until the specific feature is formally transferred to the District for operation and maintenance. This arrangement allows the District to start O&M of the project on the "groundfloor" while Federal fund and technical expertise is readily available. Conversely, the government does not have to set up a temporary short term operation and maintenance organization. On January 1, 1990, Block I, consisting of Mirdan Canal-Sections II and III, Mirdan laterals, and the Geranium System were transferred to the District for operation and maintenance.

A contract for construction of Davis Creek Dam was awarded to Gilbert Central Corporation, Omaha, Nebraska, in September of 1988. Due to the unseasonably warm and dry winter months for two consecutive winter seasons, the contractor is considerably ahead of schedule. It is projected that Davis Creek Dam will be completed in October, 1990, a full 10 months ahead of schedule. Land acquisition for the entire Davis Creek Reservoir area is complete except for 240 acres, which is scheduled for acquisition in fiscal year 1991. A contract for the relocation of the county road, reservoir clearing, and reservoir fencing is scheduled for award in March of 1991, and for completion in September, 1991.

A contract to construct the First Section of the Fullerton System and all the Elba System is scheduled for award late in April 1990. All rights-of-way have been secured for this construction.

The design of the Fullerton II and III System is underway in the Denver office, and the contract award is scheduled for June 1991. Right-of-way acquisition for this section is currently underway.

Design data for the Kent Diversion Dam and Canal is underway, with design scheduled to start early in FY 1991, leading to a contract award in the spring of 1992. This is the last feature of the North Loup Division.

The current schedule projects all construction to be completed in the fall of 1993. According to terms of the repayment and water service contracts, a component of Federal operation and maintenance responsibility would continue until January 1, 1995.

During FY 1991, construction of the Fullerton-Elba System will continue, and the county road relocation, fencing, and clearing at

Davis Creek Reservoir will be completed. Design of the Fullerton 2 and 3 System will be completed, and the design of Kent Diversion Works and Canal will begin. Rights-of-way acquisition for Fullerton 2 and 3 System and the Kent Diversion Works and Canal will be completed. A contract for construction of the Fullerton 2 and 3 System will be awarded late in FY 1991. Wildlife mitigation measures, procurement of operating equipment, and maintenance of the completed facilities will continue.

Finally, you will be able to see from our written testimony that from completion percentages prepared by the Bureau of Reclamation, the North Loup Project, excluding the cost of deferred facilities, will be nearly 81% complete by September 30, 1990. In order to complete construction we ask this Committee to support the President's budget request of $21,646,000 for fiscal year 1991. We appreciate the Committee's past support of our efforts to construct the Calamus Dam and Davis Creek Dam and the delivery structures associated with our project. In this regard, Mr. Chairman and members of the Committee, we wish to thank you also for your continued support.

Respectfully submitted,

Donald E. Kilday

Donald E. Kilday, President
Twin Loups Irrigation District

3-8-1990

Completion Percentages

North Loup Division

The enclosed "Project Data Sheet", which is part of the FY 1991 Budget Request, shows a completion percentage of 71 percent for the North Loup Division as of January 31, 1990. This is based on a complicated computation procedure that is supposed to correct for inflation factors, and more accurately reflect actual completion of contract work and not so much the design work.

In the case of North Loup Division, the above 71 percent completion percentage is very close to a conveniently derived, and I believe more accurate, figure based solely on funds spent.

$$\frac{\text{Spent through Sept. 30, 1989 (FY 1989)}}{\text{Total Federal Obligations}} = \frac{\$246{,}502{,}507}{\$348{,}610{,}000} = 70.7\%$$

Projecting completion percentages through FY 1990 would give the following results:

$$\frac{\text{Estimated Spending through Sept. 30, 1990 (FY 1990)}}{\text{Total Federal Obligations}} = \frac{\$267{,}530{,}507}{\$348{,}610{,}000} = 76.7\%$$

One could more accurately reflect the completion percentage of construction by eliminating the estimated costs of deferred facilities (surface and subsurface drains) from the total federal obligations.

$$\frac{\text{Estimated Spending through Sept. 30, 1990 (FY 1990)}}{\text{Total Fed. Obligations-Cost of Deferred Facilities}} = \frac{\$267{,}530{,}507}{\$348{,}610{,}000-\$16{,}185{,}000} = 80.5\%$$

Mrs. **Smith**. That is a very fine statement. Go ahead, Don Hughes.

Mr. **Hughes**. Madam Chairman and Members of this committee, it is an honor and privilege for me to appear before you, I want to thank you for getting us started or out of the woods last year. It was in a position where the construction that had been completed would have left a hole.

Thankfully, we have had that overcome. I understand that they started working on it again already just the other day. So, hopefully, by this fall I think that part of the construction will be completed. The outlet structure for the Elba and Fullerton I canal is in place and, like Don mentioned, we will be ready to move forward with the awarding of the contract hopefully by the time we return from this trip we will know about the bids and the awards will be made May 5.

It is an honor and a privilege to appear before you. We have a little remorse in our hearts because we are losing our cherished member from the Third District, Mrs. Smith. We thank you for all your support along with the entire committee. We look forward to having you back to Nebraska as a citizen.

Mrs. **Smith**. We really appreciate this. A lot of people in this room have shed a lot of blood to get our project completed. It is so good to say that at the end of this year we will be 77 percent done. We had a big job this year to educate the Administration and some other people and get our project on the road. I told them we could not leave a hole 50 acres 50 feet deep, so big that we could drop the Capitol into it. I want to turn to my friend John Myers who stayed with us all the way.

Mr. **Myers**. Madam Chairman, I share your concern. I don't think you realize how important Mrs. Smith has been to your projects.

Mr. **Hughes**. We do.

Mr. **Myers**. The President is not nearly as persistent as she is—and maybe not as effective. Your presence is not nearly as important as having her present and active on this committee. So your loss is certainly our loss and the nation's loss. It means your work in the future will be more difficult because you will not have her on this committee, reminding us as we mark up the bill.

You will not have that close friend. You have had good representatives from Nebraska but Mrs. Smith's being on appropriations has certainly helped a lot. I tried to talk her out of retiring, but she is persistent on that too.

Mr. **Hughes**. We tried to tell her just two more years but she says no.

Mrs. **Smith**. I am going to go back and be with all of you. I want everyone to see this good looking group standing up. You know I have not seen this room filled with such good looking people since you were here last year.

WEDNESDAY, APRIL 4, 1990.

PAPILLION RIVER AND TRIBUTARIES LAKE

WITNESSES

HONORABLE PETER HOAGLAND, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEBRASKA

EUGENE CHAMBERLAIN, CHAIRPERSON, PAIO-MISSOURI RIVER NATURAL RESOURCES DISTRICT

MARTIN PETERMANN, ASSISTANT GENERAL MANAGER, PAIO-MISSOURI RIVER NATURAL RESOURCES DISTRICT

Mrs. **SMITH**. Congressman Hoagland has just come in the room. I want to call on him, Gene Chamberlain and Martin Petermann to express their views.

Mr. **HOAGLAND**. Madam Chairman, Members of the Subcommittee on Energy and Water Development: My name is Peter Hoagland. I represent the Second Congressional District in Nebraska. It is my pleasure to have this opportunity to testify before the committee particularly with you presiding. This may be my only opportunity to speak before a committee over which you are presiding.

Mr. **MYERS**. We are pleased to see her presiding, as I know you are.

Mr. **HOAGLAND**. I am likely to forget that this is not a Nebraska breakfast and lapse into one of my jokes, but I will spare the committee, Madam Chairman.

Mrs. **SMITH**. I have my doubts.

Mr. **HOAGLAND**. I am really here today to introduce the people who know what is going on, the people with the expertise, Gene Chamberlain of the Papio River District and Mr. Martin Petermann who is the assistant general manager.

Mrs. **SMITH**. Welcome to both of you.

Mr. **HOAGLAND**. I have come to know both these talented capable gentlemen in meetings we have had before back in the district. Let me say how pleased I am that the Administration has included funds in its budget not just for the Papio Creek and its tributaries in Omaha, but also the Missouri River mitigation, planning assistance to the states and projected modification for the improvement of the environment, all coordinated with the Papio-Missouri River Natural Resources District headquartered in Omaha.

I am here to support those projects, to share any information that we have with the committee but most important not to take the committee's time. Instead to defer to my two colleagues here and allow them to present the details of these proposals.

Thank you very much.

Mrs. **SMITH**. Who goes first?

Mr. **CHAMBERLAIN**. I am Gene Chamberlain, Chairman of the Papio-Missouri River Natural Resources District, with headquarters in Omaha, Nebraska. Nebraskans have always appreciated your kindness and support towards many of our projects. We, of course, are most fortunate to have Congresswoman Smith on your committee. She has continually supported our district's projects over the years.

Let me briefly say that we are in full agreement with the Administration's budget for the Papillion Creek and its tributaries.

We soundly support the $2.187 million for the Big Papio Creek flood control channel and the $718,000 for recreation development on Zorinsky Lake.

Secondly, we would emphasize that we are in strong support for the $429,000 in the budget for Missouri River Mitigation. We would ask that the appropriate language be put in the budget document to allow real estate acquisition by the Corps of Engineers with dollars not utilized or needed for planning and final design.

Third, we support the continued funding of Section 22 to states, including the State of Nebraska, for planning needed projects. We do, however, oppose the proposed cost sharing on Section 22 funds, as proposed by the Administration. We would ask that Congress not require cost sharing.

Finally, we support monies in the President's budget of $900,000 for project modification for improvement of the environment on the Missouri River and Papillion Creek Tributaries, Section 1135 funding of Public Law 92-662. We foresee these dollars as being well spent, from a taxpayer's point of view, so that we can have a few testing demonstrations before we spend millions of dollars, as authorized in the 1986 Missouri River Mitigation Act.

Mrs. Smith, although the Papio-Missouri is not in your district, we certainly want to thank you for the efforts you have spent on our behalf.

Mrs. SMITH. I know a lot about that project. I have always been in support of that project.

Mr. PETERMANN. I want to give you our thanks over the years for what you have done for us and all Nebraskans.

Mrs. SMITH. We appreciated the opportunity. Having all of you come in every year is one of the things I will miss most about the Congress.

Are there any questions? Thank you all for being here.

[The statement of the Papio-Missouri River Natural Resources District follows:]

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April 4, 1990

STATEMENT BY

PAPIO-MISSOURI RIVER NATURAL RESOURCES DISTRICT

TO

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

HOUSE COMMITTEE ON APPROPRIATIONS

CONGRESSMAN THOMAS BEVILL, CHAIRMAN

-- **PAPILLION CREEK AND TRIBUTARIES - OMAHA, NEBRASKA**

-- SUPPORT - Administration's $2,187,000 funding level for FY 91 for Big Papillion Creek Improvement Project for Flood Control

-- SUPPORT - Administration's $718,000 funding level for FY 91 for Dam Site 18 (Zorinsky Lake) for Recreation/Flood Control

-- **MISSOURI RIVER MITIGATION: P.L. 99-662 (Section 601)**

-- SUPPORT - Administration's $429,000 funding level for FY 91

-- REQUEST - Appropriation language to allow real estate acquisition

-- **PLANNING ASSISTANT TO STATES: P.L. 93-251 (Section 22)**

-- SUPPORT - Administration's $5,000,000 funding level for FY 91

-- REQUEST - $300,000 for State of Nebraska projects

-- OPPOSE - Newly proposed cost-share requirements

-- **PROJECT MODIFICATIONS FOR IMPROVEMENT OF THE ENVIRONMENT: P.L. 99-662 (Section 1135)**

-- SUPPORT - Administration's $5,000,000 funding level for FY 91

-- SUPPORT - Specific $900,000 funding level for demonstration project in degraded Missouri Riverbed reach

-- SUPPORT - Specific $61,000 funding level for demonstration project Papillion Creek and Tributaries Lakes, Nebraska

April, 1990

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PAPILLION CREEK AND TRIBUTARIES - OMAHA, NE

SUPPORT - Administration's $2,187,000 Funding Level for FY 91 for Big Papillion Creek Improvement Project for Flood Control

SUPPORT - Administration's $718,000 Funding Level for FY 91 Dam Site 18 (Zorinsky Lake) Recreation/Flood Control

Big Papillion Creek Improvement Project:

The Papillion Creek and Tributaries Lakes Project was authorized by Section 401(A) of the 1986 Water Resources Development Act (WRDA) Public Law 99-662. This project was authorized as a result of a basin-wide re-evaluation study completed in 1985, and consists of channel improvement features between the West Center Road downstream to "L" Street along the Big Papillion Creek in Omaha, Nebraska. The project is a high priority for the City of Omaha, the Papio-Missouri River Natural Resources District, and the State of Nebraska.

The Papillion Creek basin essentially drains the western part of the Omaha metropolitan area. The basin comprises an area that drains about 402 square miles. The Omaha metropolitan area is near the center of the basin, of which 25% is urbanized. The Army Corps of Engineers 1985 re-evaluation report investigated flood damage reduction measures in all the sub-basins in the Papillion Creek basin including dams, levees, channel improvement, building relocation, floodproofing, bridge modification, and other management measures.

The purpose of the project is simply to reduce flood damages in the area which would be caused by a 50-year storm event. These measures are expected to reduce annual damages in the Big Papillion Creek flood plain by at least 60%, without causing significant changes upstream or downstream from the channel improvement area. Improvement features would begin about 1/4 mile upstream from West Center Road bridge and extend downstream about 2-1/4 miles through the "L" Street bridge (Highway 275). A recreation trail for bicycling and walking/jogging would be constructed within the channel improvement right-of-way. A non-structural component consists of basin-wide flood emergency plan which includes an electronic flood warning system. Levees would be constructed in some locations along the channel to contain the 50-year flood event. The design of the improved channel would be an average of about 170 ft. wide from bank-to-bank. Rock would be placed through bridge openings, and on channel banks where erosion is either presently active or anticipated.

A number of relocations would be required as a result of the channel improvement project. These relocations include facilities such as power lines, water lines, sanitary sewer lines, natural gas pipelines, telephone lines, three buildings, and a swimming pool. Acquisition of real estate land to construct the project has begun by the local sponsor, Papio-Missouri River Natural Resources District.

The total estimated cost of the project is $8,000,000 of which $5,550,000 is Federal and $2,450,000 is non-Federal Congress appropriated $500,000 in F.Y. 90 to begin construction on Phase I from "L" Street to "F" Street. Construction is anticipated to begin in August 1990 and completed during 1992. Annual benefits from the proposed project would amount to $982,000. There is a capability and need for $2,187,000 (federal funds) in FY 91 to complete the first phase construction in the reach from "L" Street to "F" Street and begin the second phase from "F" Street to West Center Road.

Dam Site 18 (Zorinsky Lake):

The Papillion Creek and Tributaries Lakes Project was originally authorized by Public Law 90-483 (1968 Flood Control Act). The then authorized project consisted of a system of 21 small dams and reservoirs for the purposes of flood control, recreation and water quality enhancement. Four of these dams were built (Sites 11, 16, 18 and 20) prior to a revised authorization by Section 401(A) of the 1986 Water Resources Development Act which called for deauthorization of the remaining 17 dams in favor of construction of a 2-1/4 mile channel improvement on the Big Papillion Creek in Omaha. Completion of the recreational features at the constructed reservoir sites also remained part of the authorization. Due to water quality problems in the watershed upstream of Dam Site 18, construction of the recreation facilities were delayed. Now that those problems have been resolved, it is imperative to complete this work. The recreation facilities at the other three constructed sites have been completed.

This project is vital to the Omaha metropolitan area. According to the Nebraska State Comprehensive Outdoor Recreation Plan (SCORP), eastern Nebraska has 53.7% of the state's population, but only 3.7% of the state recreational lands. Therefore, development of outdoor recreation facilities in the eastern part of the state needs to be a high priority. The project is a high priority for the City of Omaha, the Papio-Missouri River Natural Resources District and the State of Nebraska. It should be so for the federal government as well.

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MISSOURI RIVER MITIGATION: P.L. 99-662 (Section 601)
SUPPORT - ADMINISTRATION'S $429,000 FUNDING LEVEL - F.Y. 91
REQUEST - APPROPRIATION LANGUAGE TO ALLOW REAL ESTATE ACQUISITION

We support the $429,000 funding level as contained in the president's 1991 budget for fish and wildlife mitigation of the Missouri River Bank Stabilization and Navigation Project (Section 601 of P.L. 99-662). We ask, however, that the appropriation language provide that the Corps of Engineers be directed to initiate acquisition of real estate required for the project using any funds not needed for completion of planning and design activities. If additional funds are appropriated for the project, they would be used effectively. Initial priority projects proposed by the four-state wildlife agencies for the mitigation project have an estimated cost approaching $8,000,000.

The Missouri River Mitigation authorization allows nearly $54 million to be spent by the Corps of Engineers in the four-state area of Iowa, Kansas, Missouri and Nebraska to restore fish and wildlife habitat lost due to the federally constructed channel and bank stabilization project on the Missouri River. This channelization project has inadvertently caused severe environmental problems; that is, an immediate loss of nearly 475,000 acres of aquatic and terrestrial habitat. Indirect losses continue primarily due to the degradation or scouring (a result of sediment deposition in the upstream reservoirs and intensified erosion downstream of Sioux City). Degradation has virtually eliminated all of the previously abundant backwater breeding and rearing areas, riparian wetlands and oxbow lakes which are hydrologically connected to the river. They have simply dried up due to the even deepening (scoured) channel. Below Omaha to St. Louis, aggradation or the deposition of sediment becomes a problem. Artificially high river elevations, continual channel maintenance and more frequent overflows are the principal habitat concerns.

The four states of Nebraska, Kansas, Iowa and Missouri continue to be united in this effort to renovate this 732 mile reach of the Missouri River. Although nearly $54 million is authorized, we do recognize the national budgetary concerns and are, therefore, merely supporting the Administration's $429,000 funding level for F.Y. 91, with a request that the appropriation language allow any excess planning money be used for project land acquisition.

An example of the tremendous local commitment to the Missouri River is the Papio-Missouri River Natural Resources District's Corridor Project (the P-MRNRD represents one-third of the population in the State of Nebraska). Our Missouri River Corridor Project attempts to address the grassroot concerns along the Missouri River regarding wetland/wildlife habitat reclamation. But, we cannot do this ourselves. Federal mitigation funding is essential to accomplish these goals

The Papio-Missouri River Natural Resources District is, therefore, extremely pleased with the President's recognition of Missouri River mitigation needs and subsequent funding support. It will have a very positive and timely impact on the entire region.

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April, 1990

PLANNING ASSISTANCE TO STATES: P.L. 93-251 (Section 22)

SUPPORT - ADMINISTRATION'S $5,000,000 FUNDING LEVEL - F.Y. 91

REQUEST - $300,000 FOR STATE OF NEBRASKA PROJECTS

OPPOSE - NEWLY PROPOSED COST-SHARE REQUIREMENTS

We fully support the Administration's $5,000,000 national funding level for Planning Assistance to the States (Section 22 of P.L. 93-251). Additionally, Nebraska is requesting the maximum amount of $300,000, to allow the state to continue with its planning and design efforts for a wide variety of vital, water related projects. These "Section 22" funds, provided to the Corps of Engineers for planning and technical assistance, has allowed a number of vital, statewide water projects to be initiated.

This funding request is a State priority. However, it has a large impact on the Papio-Missouri River Natural Resources District. We would like to continue these project planning efforts within our Natural Resources District and a $300,000 appropriation for Nebraska would allow this to continue in a coordinated manner.

We oppose, however, any cost-share requirements project for this program.

The current Administration's budget has this Section 22 program funded at $5,000,000. However, this $5,000,000 is at a 90% Federal/10% local cost share. This would result in an actual reduction of $500,000 from F.Y. 89 levels. We would like to voice our opposition on this reduction, as well as the new requirement for a cost-share provision. The rational for opposing the cost-share requirement is several fold:

1. This cost-share provision is rather odd in that it would not provide funds for state employees to conduct the planning or technical assistance, but rather for Federal Corps of Engineers staff to carry out this service provided to the states. In effect, an apparent double cost-share provision for the Section 22 program is being presented.

2. The closed Federal budget process would not allow local (state) cost-share sponsors an opportunity to budget an appropriate cost-share amount until after their respective legislatures have established their fiscal year's budget.

3. Valuable, on-going projects would be hit mid-stream with this cost-share requirement. Many of these projects would not continue due to lack of local funding. Incompleted projects would have essentially wasted their initial funding appropriation by not being allowed to continue through fruition.

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April, 1990

PROJECT MODIFICATIONS FOR IMPROVEMENT OF THE ENVIRONMENT:
P.L. 99-662 (Section 1135)

SUPPORT - ADMINISTRATION'S $5,000,000 FUNDING LEVEL - F.Y. 91

SUPPORT - SPECIFIC $900,000 FUNDING LEVEL FOR DEMONSTRATION PROJECT IN DEGRADED MISSOURI RIVERBED REACH

SUPPORT - SPECIFIC $61,000 FUNDING LEVEL FOR DEMONSTRATION PROJECT PAPILLION CREEK AND TRIBUTARIES LAKES, NEBRASKA

We wholeheartedly support the Administration's $5,000,000 national funding level for Project Modifications for Improvement of the Environment (Section 1135 of P.L. 99-662). We similarly support the President's $900,000 budget request for demonstration projects in a degrading reach of the Missouri River and $61,000 for renovation of lakes in the Papillion Creek Watershed, Nebraska.

Missouri River:

Locally, we have been very aggressive in our support of the Corps of Engineers' high priority project recommendations within our Natural Resources District. The Missouri River Bank Stabilization and Navigation Project for backwater restoration in a degraded riverbed reach will demonstrate the effectiveness of techniques to rehabilitate aquatic/wetland habitat on the Missouri River. Implementation would restore vital aquatic habitat lost through river degradation, caused by the Federal Bank Stabilization/Navigation Project and mainstem reservoirs.

Conceptual plans and preliminary engineering designs for this demonstration project will be finalized in the current 1990 fiscal year, and provided to the Corps of Engineers for development of this demonstration site. The Papio-Missouri River Natural Resources District will also act as the local cost-share sponsor. (We have already appropriated in F.Y. 1990 sufficient funds to cost share this demonstration project.)

The Papio-Missouri River Natural Resources District is committed, ready to go and extremely optimistic about the immediate and long-range benefits of this demonstration project. The Administration's recognition of the national priority scope of this this project, coupled with this timely funding support will serve as a catalyst for us to continue our wetland/habitat reclamation efforts along the entire Missouri River Corridor.

Papillion Creek Lakes:

The Papillion Creek reservoirs in the Omaha area are a vital part of the recreation opportunities available in the eastern part of Nebraska. Due to erosion and sedimentation, this reservoir is being prematurely depleted. The proposed demonstration project would involve placement of shoreline aquatic plants and webbing to reduce erosion, construction of detention ponds in adjacent areas to keep sediment from entering the lake, construction of rock dikes to keep sediment zones in the headwater potions of the lake and regulation of outlet releases to improve water quality. Beneficial effects would be decreased erosion, improved water quality, decreased loss of fishery habitat and prolonged reservoir life. The Papio-Missouri River Natural Resources District stands ready to act as local cost share sponsor.

WEDNESDAY, APRIL 4, 1990.

LOUP BASIN MANAGEMENT STUDY

WITNESSES

LEE SONDERUP, PRESIDENT, CEDAR VALLEY RECLAMATION DISTRICT

JAMES VANDERLOOP, SR., SECRETARY-TREASURER, CEDAR VALLEY RECLAMATION DISTRICT

ROGER HELLBUSH, DIRECTOR, CEDAR VALLEY RECLAMATION DISTRICT

MICHAEL J. SHAUGHNESSY, ATTORNEY, CEDAR VALLEY RECLAMATION DISTRICT

Mrs. SMITH. Now we will turn to the Loup Basin Management Study, Lee Sonderup; James Vanderlooop, Sr.; Roger Hellbush; Michael J. Shaughnessy.

Mr. VANDERLOOP. Thank you Mrs. Smith and your distinguished subcommittee for the chance to speak today. I am James Vanderloop.

This past year we have conducted a preliminary study in the Cedar Valley to study the natural resource water. We did find some things, but we think we have some sleeping giants out there yet that we have not had time to uncover and pursue them.

I don't need to tell your committee but maybe water is probably the most important resource we have in Nebraska, the United States and maybe I could even include the world.

If we lose our water, there is nothing I don't think we could do.

We are pleading for $100,000 to consider continuing with this preliminary study for another year to see what we find. Mainly we are going to be looking at water quality, recharge and probably stream stabilization.

Again, I want to thank you, Mrs. Smith for all your support over the years.

Certainly we are going to have a hollow spot when we come back here again pleading. We are sure going to welcome you back to Nebraska.

Thank you.

Mrs. SMITH. I look forward to coming back and being with all of you. I know you are emphasizing that you have not had adequate study and you feel we must have an in-depth study to determine what the possibilities are.

Mr. VANDERLOOP. Yes.

Mrs. SMITH. Who is the next speaker?

Mr. SONDERUP. I want to say we want to thank the committee for all you have done in the past.

I hope down the road we can get something done some day. We want to thank you for all your help.

Mrs. SMITH. Thank you all for being here.

[The statement of the Cedar Valley Reclamation District follows:]

THE CEDAR VALLEY RECLAMATION DISTRICT

JOINT STATEMENT OF LEE SONDERUP, GENOA, NEBRASKA,
JAMES VANDERLOOP, SR., CEDAR RAPIDS, NEBRASKA, AND
ROGER HELLBUSCH, BELGRADE, NEBRASKA
GIVEN BY
MICHAEL J. SHAUGHNESSY
IN SUPPORT OF THE LOUP RIVER BASIN MANAGEMENT STUDY
SPONSORED BY THE CEDAR VALLEY RECLAMATION DISTRICT
TO THE ENERGY AND WATER DEVELOPMENT
SUBCOMMITTEE ON APPROPRIATIONS OF
THE UNITED STATES HOUSE OF REPRESENTATIVES

APRIL 4, 1990

Dear Mr. Chairman and Members of the Committee:

My name is Michael J. Shaughnessy of St. Paul, Nebraska. I am an attorney, and I represent the Cedar Valley Reclamation District. I present to you this statement as written testimony on behalf of the Cedar Valley Reclamation District.

With me today is Lee Sonderup, President of the Cedar Valley Reclamation District, James Vanderloop, Sr., Secretary-Treasurer of the Cedar Valley Reclamation District and Roger Hellbusch, Director of the Cedar Valley Reclamation District.

The Bureau of Reclamation has completed a draft of a Special Report for the Cedar River Basin portion of the Loup River Basin Water Management Study. The draft report was completed in February, 1990 and mailed to Nebraska'a Natural Resources Commission and the Cedar Valley Reclamation District Board, and the Great Plains Regional Office of the Bureau of Reclamation for review. The report will not be final until Reclamation's review is completed. Information for this document was derived from the Sandhills Area Study progress reports, other information provided by the Natural Resources Commission, and information produced in Reclamation's Denver Office. Since no funds were budgeted for the Loup Basin Study in FY 1990, the report was completed with money remaining from FY 1989 funding.

Reclamation's Denver Office completed engineering, hydrologic and economic evaluations of two options to use the water and land resources of the basin. The two options were for off-stream storage reservoirs supplied with Cedar River water to irrigate land in the Cedar River Basin. The two options analyzed did not have a favorable benefit/cost ratio when the only benefit was irrigating land to grow corn. Other benefits were not quantified due to budget and time constraints so more study remains to be done. Other benefits that could be attributed to the two options include recreation, ground-water recharge for water quantity and quality improvement, habitat enhancement and stabilizing the Cedar River flow. Public meetings held in Spalding and Fullertin, NE in November, 1988 did not indicate other major problem areas from which to gain benefits.

If additional benefits for recreation, fish and wildlife, flood control, drinking water supply or other benefits were derived from the project, economic justification may be obtained. Further study would have to be done to identify other benefits. One of the purposes of this study was to identify problems in the basin. The B/C anaysis shows that one problem is the crops and prices for that crop that limit the projects that can be proposed for single-purpose irrigation projects.

Producing other crops has been discussed during meetings in the Cedar River Basin. Crops suggested were onions, potatoes, sunflowers, sugar beets, edible beans, asparagus, and cucumbers. These crops have been grown in Nebraska before with success and would diversify the farming operations and stabilize the agricultural economy. These crops if grown in the basin would increase the benefits that could be attributed to irrigation as these crops have a higher price per acre than corn which currently makes up most of the farm production.

One area that was not analyzed in detail is the effect that lower river levels might have on wetlands along the Cedar River. The U.S. Fish and Wildlife Service has identified land along the river which are classified as wetlands. Almost every section of land along the Cedar River has at least 10 acres of wetlands. These acres need special attention when water and land resource projects are proposed and constructed. Since Federal policy is to have no net loss of wetlands, any project development would have to consider the existing wetlands.

As shown in the operation analysis of the reservoirs, water is available from the Cedar River. The amount of water depends on minimum streamflow requirements. The amount of water used for this study, about 50 ft3/s, may be enough to provide an economical irrigation water supply if all the benefits were quantified. Storing surface water in the offstream reservoirs would provide ground-water recharge which would stabilize the ground water levels downstream of the reservoirs and provide substantially more benefits for the project.

A ground-water model that can simulate the upper Cedar River Basin area would be very helpful in determining what effect ground-water irrigation development would have on flows in the river. Alternate strategies could be run through the model and the effect of these strategies on the water supply determined. One of the problems that was mentioned in the public meetings is the drying up of the lower river reaches in some years.

Another use of Cedar River water could be as a high quality water supply for the municipalities in the basin. There are communities that use the river or ground-water that is interconnected with the river for drinking water. The city of Genoa has drilled new wells recently due to high nitrate problems. If an economical water supply could be derived from the Cedar River, all people in the basin could benefit. A rural or municipal water supply would have to have many customers to make the system economical. More study of this problem is needed to quantify the need and costs of this kind of project.

Another solution to this ground-water quantity and quality problem might be a recharge project. This type of project is being investigated by other groups in the state and could be a viable method of supplying high quality water to existing wells. Some parts of the Cedar River Basin experience problems for even domestic use. Recharge is not expected to help these areas because the aquifer is probably not adequate to hold or release water in the quantities needed.

Other studies could be performed in the future to determine the ground-water aquifer characteristics in the whole basin which would give the residents a better idea of how different types of development will affect the water supply. Current public attitudes indicate that people are thinking more about their ground-water quality and quantity. Studies that can determine effects of future activities on the quality and quantity of the ground water before actions occur should be accomplished now and not wait until after an action has taken place.

Government programs have caused some changes in the types of land that are used for crop production. The acres involved in these programs are categorized by the USDA agencies coordinating the programs. These land use restrictions need to be considered when analyzing any developments in the basin. Economics will dictate the use and care given to these lands. Economics will also control what the price of crops are and the economic viability of water resouces project. Project development could stimulate the area and rural economic development.

For these reasons, we are asking the committee's support to fund an additional $100,000.00 to continue the current study benefits which were not analyzed and to do a more thorough reconnaissance study of the Cedar Valley.

We wish to thank the Committee for its continued support.

Respectfully submitted,

Michael J. Shaughnessy
For the Cedar Valley Reclamation District

WEDNESDAY, APRIL 4, 1990.

PLATTE RIVER BANK STABILIZATION

WITNESSES

KENT O. MILLER, GENERAL MANAGER, TWIN PLATTE NATURAL RESOURCES DISTRICT

DALE WAHLGREN, PRESIDENT, PLATTE RIVER FLOOD CONTROL ASSOCIATION

ROBIN MILLER, STUDENT

Mrs. SMITH. Now we turn to the Platte River, Mr. Ken Miller and Dale Wahlgren. Welcome to the two of you.

Mr. MYERS. Who is the young lady with you?

Ms. MILLER. My name is Robin Miller.

Mr. MYERS. How old are you?

Ms. MILLER. I am a senior in high school.

Mr. MYERS. It is nice to have you here.

Mrs. Smith is retiring so she will have to have somebody take her place.

Mrs. SMITH. Robin, don't you let him say anything about you playing hooky, because this morning I was over on the steps of the Capitol talking to the 76 high school students from the Third District who came here for a week on the Close-Up Program.

They are learning more than they would learn back at school.

We are glad to have you here.

Mr. MILLER. Thank you.

I am General Manager of the Twin Platte Natural Resources District. I am testifying on the demonstration project. This particular project was authorized in Section 603 of the 1986 Water Resources Development Act.

I first testified before this committee in 1984. This is the sixth time that I have had the opportunity and privilege to come before you.

I am pleased to report that due to this committee's support and the subsequent congressional direction and emphasize "direction" because it has taken congressional direction of the Corps of Engineers have completed the preliminary studies and are scheduled to complete final design early this year.

I am therefore pleased to report to you today that after seven years of planning, I am ready to request funds for construction.

This demonstration project continues to be an idea demonstration model of a typical reach of the Platte River System that would benefit the entire basin from the knowledge gained.

Alternatives that are being looked at are things like using fence type material, using bales of hay, using three trunks and brush, using vegetation, methods the local people can afford to use. We need to know which will work.

Full funding for construction of this demonstration project is estimated by the Missouri River Division of the U.S. Army Corps of Engineers to be $4,000,000 and construction can begin in fiscal year 1991. The demonstration project is proposed to be constructed over five years.

The schedule proposed for funding is: 1991 fiscal year, $1,800,000; 1992 fiscal year, $1,000,000; 1993 fiscal year, $600,000; 1994 fiscal year, $400,000; and 1995 fiscal year, $200,000.

I anticipate that the local cost share for construction of this demonstration project in the amount of $4,000,000 for fiscal years 1991 through 1995 and I am requesting $1,800,000 for construction during fiscal year 1991.

I would like to turn to my colleague Dale Walgren to introduce himself.

[The statement of Kent O. Miller follows:]

TESTIMONY

TO

CONGRESS OF THE UNITED STATES

HOUSE OF REPRESENTATIVES
APPROPRIATIONS SUBCOMMITTEE
ON
ENERGY AND WATER DEVELOPMENT

By

Kent O. Miller, P.E.
General Manager
and
District Engineer

Twin Platte
Natural Resources District

April 4, 1990

PROJECT	PLATTE RIVER BANK STABILIZATION DEMONSTRATION PROJECT FOR A REACH OF THE PLATTE RIVER BETWEEN HERSHEY, NEBRASKA, AND THE BOUNDARY BETWEEN LINCOLN AND DAWSON COUNTIES, NEBRASKA
SUMMARY	REQUESTING FULL FUNDING FOR CONSTRUCTION OF $4,000,000.00 FOR FISCAL YEARS 1991 THRU 1995. REQUESTING $1,800,000.00 FOR CONSTRUCTION DURING FISCAL YEAR 1991.

1 MR. CHAIRMAN, MEMBERS OF THE COMMITTEE, I AM KENT O. MILLER, GENERAL MANAGER AND DISTRICT ENGINEER FOR THE TWIN PLATTE NATURAL RESOURCES DISTRICT.

2 NEBRASKA'S 23 NATURAL RESOURCES DISTRICTS ARE LOCAL POLITICAL SUBDIVISIONS OF THE STATE OF NEBRASKA CREATED TO CONSERVE, PROTECT, DEVELOP AND MANAGE THE NATURAL RESOURCES OF THE STATE.

3 THE TWIN PLATTE NATURAL RESOURCES DISTRICT IS LOCATED IN WEST CENTRAL NEBRASKA WHERE THE NORTH PLATTE RIVER AND THE SOUTH PLATTE RIVER COME TOGETHER TO FORM THE PLATTE RIVER.

4 I AM TESTIFYING TODAY IN REGARD TO A STREAMBANK STABILIZATION "DEMONSTRATION PROJECT" ALONG THE PLATTE RIVER AND ITS TRIBUTARIES, THE NORTH PLATTE RIVER AND SOUTH PLATTE RIVER IN LINCOLN COUNTY, NEBRASKA THAT IS AUTHORIZED IN SECTION 603 OF THE 1986 WATER RESOURCES DEVELOPMENT ACT. THE "DEMONSTRATION PROJECT" IS LOCATED IMMEDIATELY ABOVE AND BELOW THE CONFLUENCES OF THE NORTH PLATTE RIVER AND THE SOUTH PLATTE RIVER WITH THE PLATTE RIVER FOR A TOTAL COMBINED AND CONTIGUOUS PROJECT OF APPROXIMATELY 46 RIVER MILES. (See attached map)

5 I FIRST TESTIFIED BEFORE THIS COMMITTEE IN 1984 FOR THIS "DEMONSTRATION PROJECT". TODAY IS THE 6TH TIME THAT I HAVE HAD THE PRIVILEGE TO COME BEFORE YOU. I AM PLEASED TO REPORT TO YOU THAT DUE TO THIS COMMITTEE'S SUPPORT AND SUBSEQUENT CONGRESSIONAL DIRECTIONS, THE U.S. ARMY CORPS OF ENGINEERS HAVE COMPLETED THE PRELIMINARY STUDIES AND DESIGN AND ARE SCHEDULED TO COMPLETE THE "PLANS AND SPECIFICATIONS" AND FINAL DESIGN IN AUGUST TO COMPLETE PRE-CONSTRUCTION ACTIVITIES. I THEREFORE AM ALSO PLEASED TO REPORT TO YOU TODAY THAT I AM READY, AFTER 7 YEARS OF PLANNING, TO REQUEST FUNDING FOR CONSTRUCTION.

6 THIS "DEMONSTRATION PROJECT" CONTINUES TO BE AN IDEAL DEMONSTRATION MODEL OF A TYPICAL REACH OF THE PLATTE RIVER SYSTEM THAT WOULD BENEFIT THE ENTIRE BASIN FROM THE KNOWLEDGE GAINED. THE TWIN PLATTE NATURAL RESOURCES DISTRICT AND THE PLATTE RIVER FLOOD CONTROL ASSOCIATION HAVE STRESSED FROM THE BEGINNING THAT THIS SHOULD BE A "DEMONSTRATION PROJECT" TO DEVELOP LOW-COST SELF-HELP METHODS.

THE "DEMONSTRATION PROJECT" DESIGN CONSISTS OF 60 SITES WITH 16 SITES LOCATED ON THE SOUTH PLATTE RIVER, 6 SITES LOCATED ON THE NORTH PLATTE RIVER AND 38 SITES LOCATED ON THE PLATTE RIVER. THE DESIGN UTILIZES MANY ALTERNATIVES USED ON OTHER RIVERS IN DIFFERENT PARTS OF THE COUNTRY TO STUDY THEIR EFFECTIVENESS FOR THE PLATTE RIVER SYSTEM. MANY OF THE ALTERNATIVES IDENTIFIED ARE NONTRADITIONAL EROSION CONTROL METHODS THAT ARE NOT NORMALLY RECOMMENDED BY THE U.S. ARMY CORP OF ENGINEERS. THE TRADITIONAL METHODS PROPOSED ALLOWS FOR COMPARISONS TO THE NONTRADITIONAL METHODS AND SOME OF THE TRADITIONAL METHODS WILL BE MODIFIED FOR STUDY. EACH ALTERNATIVE WAS DESIGNED TO PROVIDE MAXIMUM EROSION PROTECTION USING AVAILABLE, ECONOMICAL AND ENVIRONMENTALLY ACCEPTABLE MATERIALS WHILE PROVIDING DEMONSTRATION VALUE AT EACH SITE.

THIS REACH EXPERIENCES SEVERE STREAMBANK STABILIZATION PROBLEMS ANNUALLY AND WILL PROVIDE IMMEDIATE BENEFITS FOR DEMONSTRATION AND STUDY. CONSTRUCTION OF THIS DEMONSTRATION PROJECT WILL ALLOW THE

TESTIMONY - KENT O. MILLER
APRIL 4, 1990

FEDERAL, STATE AND/OR LOCAL AGENCIES AND THE LANDOWNERS TO OBSERVE IN PLACE ALTERNATIVE DESIGNS AND WILL ALLOW THE LANDOWNERS TO TAKE HOME THE TECHNICAL INFORMATION FOR THE ALTERNATIVES OF INTEREST TO THEM TO PROTECT THEIR RIVER BANKS AND REDUCE THEIR DAMAGE. THE LOCAL PEOPLE WILL THEN BE ABLE TO USE THEIR OWN LABOR AND EQUIPMENT AND LOCALLY AVAILABLE MATERIALS TO BUILD THEIR OWN STREAMBANK PROTECTION FROM THE METHODS THAT ARE PROVEN TO WORK IN THE "DEMONSTRATION PROJECT".

EXAMPLES OF THE ALTERNATIVES PROPOSED ARE FENCE REVETMENTS, TIRE POST RETARDS AND MATS, VEGETATION, TREE RETARDS AND REVETMENTS, BOARD FENCE DIKES, LONGITUDINAL FENCING, STONEFILLED REVETMENTS, FLEXIBLE REVETMENTS, BRUSH DIKES, CABLED BRUSH REVETMENTS, GABION STONE, STONE AND BROKEN CONCRETE REVETMENTS, ROLLED BALE REVETMENTS AND VANE DIKES.

THIS "DEMONSTRATION PROJECT" CONTINUES TO HAVE GOOD LOCAL SUPPORT. DURING 1986 THE U.S. ARMY CORPS OF ENGINEERS DESIGN TEAM PARTICIPATED IN AN OPEN HOUSE IN THE TWIN PLATTE NATURAL RESOURCES DISTRICT OFFICE. THE OPEN HOUSE PROVIDED THE LANDOWNERS OF EACH PROPOSED SITE AN OPPORTUNITY TO MEET INDIVIDUALLY WITH THE DESIGN TEAM AND VIEW THE PRELIMINARY DESIGNS. SIXTY-THREE INDIVIDUALS CAME TO THE OPEN HOUSE ALL OF WHOM SUPPORTED THE PROJECT. EACH INDIVIDUAL HAD A MINIMUM OF AN HOUR WAIT FOR THEIR TURN AND NO ONE LEFT OR COMPLAINED.

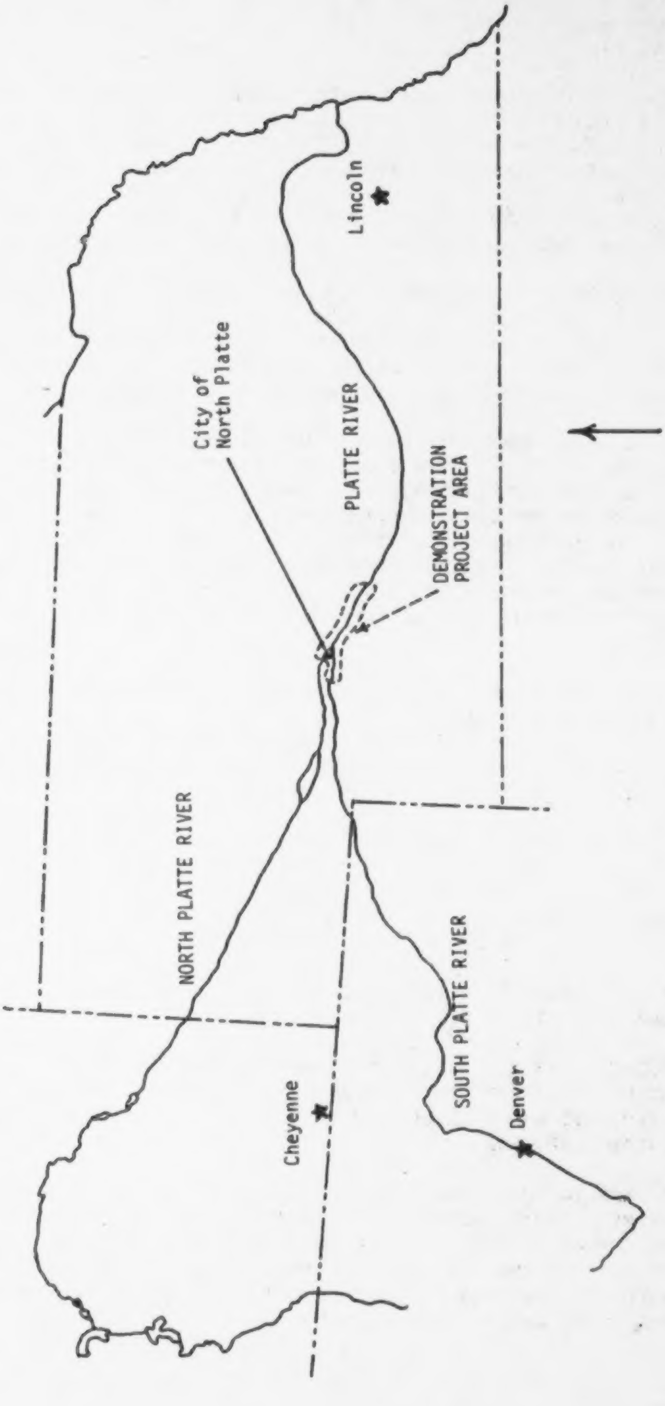
FULL FUNDING FOR CONSTRUCTION OF THIS "DEMONSTRATION PROJECT" IS ESTIMATED BY THE MISSOURI RIVER DIVISION OF THE U.S. ARMY CORP OF ENGINEERS TO BE $4,000,000.00 AND CONSTRUCTION CAN BEGIN IN FISCAL YEAR 1991. THE "DEMONSTRATION PROJECT" IS PROPOSED TO BE CONSTRUCTED OVER 5 YEARS. THE SCHEDULE PROPOSED FOR FUNDING IS:

1991 FISCAL YEAR	$1,800,000.00
1992 FISCAL YEAR	1,000,000.00
1993 FISCAL YEAR	600,000.00
1994 FISCAL YEAR	400,000.00
1995 FISCAL YEAR	200,000.00

I ANTICIPATE THAT THE LOCAL COST SHARE REQUIRED WILL BE SATISFIED WITH THE LAND RIGHTS NEEDED FOR CONSTRUCTION.

TODAY, I AM REQUESTING FULL FUNDING FOR CONSTRUCTION OF THIS "DEMONSTRATION PROJECT" IN THE AMOUNT OF $4,000,000.00 FOR FISCAL YEARS 1991 THRU 1995 AND I AM REQUESTING $1,800,000.00 FOR CONSTRUCTION DURING FISCAL YEAR 1991.

I WANT TO THANK THE COMMITTEE FOR THE CONTINUING SUPPORT FOR THIS STREAMBANK STABILIZATION "DEMONSTRATION PROJECT" AND FOR THE OPPORTUNITY TO APPEAR BEFORE YOU TODAY. I ALSO WANT TO ACKNOWLEDGE AND THANK BEFORE THIS COMMITTEE OUR FINE CONGRESSWOMAN VIRGINIA SMITH FOR HER CONTINUED SUPPORT AND DEDICATION TO NATURAL RESOURCES IN NEBRASKA AND THROUGHOUT THE ENTIRE UNITED STATES.


Lincoln
City of North Platte
PLATTE RIVER
DEMONSTRATION PROJECT AREA
NORTH PLATTE RIVER
SOUTH PLATTE RIVER
Cheyenne
Denver

Mrs. SMITH. Fine.

Dale, we are aware that you are the President.

Mr. WAHLGREN. Thank you.

I am Dale Wahlgren, President of the Platte River Flood Control Association.

I am here today representing this association and also representing myself as a landowner and farmer in the project area.

The Platte River Flood Control Association is representative of primarily landowners and farm/ranch operators along the North Platte, South Platte, and the Platte Rivers in Nebraska.

Memberships also include the towns of Maxwell and Brady, also in the project area. Our purpose is to find solutions to the problems of flooding and erosion that continually affect the Platte River system. We are a nonprofit organization, and I receive no pay for my efforts.

In discussing the problems on the Platte River system, it must be noted that many of the problems have been created by several actions of both public and private sources.

The building of several dams and storage facilities in the Platte system and its tributaries, has reduced flows in the rivers and has allowed a narrowing of the channels and a reduced carry capacity.

When we have excess flows as we periodically do, severe bank erosion occurs and losses of that bank in turn causes more and more flood damage when high water occurs.

Also because of the controlled flows, many public and private sources have constructed facilities, developed land, and farmed land closer to the rivers.

We cannot, nor do we want to turn back the clock on the development that has occurred or minimize the enormous benefit the dams and storage of water has done for irrigation and power development, but we must realize there is a price to pay for controlling a river as we have with the Platte River system.

That price must include maintenance of the river system as we have proposed with this project.

A river system that is the life blood of Nebraska. We must realize that the problems we experience will not just go away by doing nothing. This project will go a long way to providing solutions to many of the problems.

The problem of erosion is enumerated in a study that is part of the Section 55 study that was done for this project by the Corps of Engineers.

In an 8.5 mile stretch of the North Platte River, more than 215 acres of productive land eroded from July 15, 1975 to December 3, 1984. In a 19 mile stretch of the South Platte River, the loss was 850 acres in the same time period, and on a 30 mile stretch of the Platte River, the loss was 730 acres of productive land.

Those figures represent approximately 175 acres per year lost. Those figures represent only surface acres, and when you understand that one acre of surface is 5 to 10 feet deep in erosion, the problem is magnified many times over in actual tonnage of soil lost to the river.

This not only represents a loss of productive land but also scenery and wildlife habitat.

Because of the Food Security Act of 1985, we all have become more aware of the environment around us and what we must to do preserve our resources and wildlife. I know how to prevent erosion of my farm's topsoil and how to provide wildlife habitat on my farm because someone spent the money to show me that it is feasible, and I need help in doing the same thing on the river that runs beside my farm.

The benefit of this project far exceeds the cost to construct it. The cost of switching to minimum-till farming does not meet cost benefit criteria unless you look at all the other benefits long term. I maintain the same argument is valid for this project.

That brings us to the point of requesting full funding on this project, so that we can provide help for a section of the river that has been plagued by erosion and flooding, but funding for this project goes much further than just this section of the Platte River system.

We have built into this project the aspect of demonstration so that other entities and landowners themselves can look at the varied methods of river bank stabilization and come away with one that can both be financially feasible and environmentally enhancing.

The Federal Government tried to fix all of the problems we face, but it also cannot afford not to show us how to fix some of the problems we face.

We have built demonstration into this project for that very purpose.

In my first testimony before this committee in 1984, I made the statement that we do not want this project to become just another study of the problems on the Platte River system. You have graciously supported our efforts on this point, but if we stop here, we have just another study of problems on the Platte River.

Granted, we have gained much through study of these problems, and granted, we must study before we act, and after extensive study, we still feel the project has much merit and merits the committee's approval for full funding for construction.

I want to thank the Subcommittee on Energy and Water Development of the Appropriations Committee for their continued support and funding of the Platte River Bank stabilization project. I would also like to thank Congresswoman Virgina Smith for her support. She will be missed upon her retirement.

If there are any questions about my testimony, I will be willing to answer them at this time.

[The statement of Dale L. Wahlgren:]

TESTIMONY

TO

CONGRESS OF THE UNITED STATES

HOUSE OF REPRESENTATIVES APPROPRIATIONS SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

By

Dale L. Wahlgren
President
Platte River Flood Control Association

April 04, 1990

Project:	Platte River Bank Stabilization Demonstration Project for portions of the South Platte, North Platte, and Platte rivers in Lincoln County, Nebraska.
Summary:	Requesting full funding for construction in fiscal years 1991, 1992, 1993, 1994, and 1995. Full funding for all years is Four Million Dollars ($4,000,000.00). Requested amount for Fiscal Year 1991 for construction is One Million eight hundred thousand dollars ($1,800,00.00).

Mr. Chairman, members of the committee, I am Dale Wahlgren, President of the Platte River Flood Control Association. I am here today representing this association and also representing myself as a landowner and farmer in the project area.

The Platte River Flood Control Association is representative of primarily landowners and farm/ranch operators along the North Platte, South Platte, and Platte rivers in Nebraska. Memberships also include the towns of Maxwell and Brady, also in the project area. Our purpose is to find solutions to the problems of flooding and erosion that continually affect the Platte River system. We are a non profit organization, and I receive no pay for my efforts.

In discussing the problems on the Platte River system, it must be noted that many of the problems have been created by several actions of both public and private sources. The building of several dams and storage facilities in the Platte system and its tributaries, has reduced flows in the rivers and has allowed a narrowing of the channels and a reduced carrying capacity. When we have excess flows as we periodically do, severe bank erosion occurs and losses of that bank in turn causes more and more flood damage when high water occurs. Also because of the controlled flows, many public and private sources have constructed facilities, developed land, and farmed land closer to the rivers.

We cannot, nor do we want to turn back the clock on the development that has occurred or minimize the enormous benefit the dams and storage of water has done for irrigation and power development, but we must realize there is a price to pay for controlling a river as we have with the Platte River system. That price must include maintenance of the river system as we have proposed with this project. A river system that is the life blood of Nebraska. We must realize that the problems we experience will not just go away by doing nothing. This project will go a long way to providing solutions to many of the problems.

The problem of erosion is enumerated in a study that is part of the section 55 study that was done for this project by the Corps of Engineers. In a 8.5 mile stretch of the North Platte river, more than 215 acres of productive land eroded from July 15, 1975 to December 3, 1984. In a 19 mile stretch of the South Platte river, the loss was 850 acres in the same time period, and on a 30 mile stretch of the Platte River, the loss was 730 acres of productive land. Those figures represent approximately 175 acres per year lost. Those figures represent only surface acres, and when you understand that one acre of surface is 5 to 10 feet deep in erosion, the problem is magnified many times over in actual tonnage of soil lost to the river. This not only represents a loss of productive land but also scenery and wildlife habitat.

Because of the Food Security Act of 1985, we all have become more aware of the environment around us and what we must do to preserve our recourses and wildlife. I know how to prevent erosion of my farm's topsoil and how to provide wildlife habitat on my farm because someone spent the money to show me that it is feasible, and I need help in doing the same thing on the river that runs beside my farm. The benefit of this project far exceeds the cost to construct it. The cost of switching to minimum-til farming does not meet cost benefit criteria unless you look at all the other benefits long term. I maintain the same argument is valid for this project.

That brings us to the point of requesting full funding on this project, so that we can provide help for a section of the river that has been plagued by erosion and flooding, but funding for this project goes much further than just this section of the Platte River system.

We have built into this project the aspect of demonstration so that other entities and landowners themselves can look at the varied methods of river bank stabilization and come away with one that can both be financially feasible and environmentally enhancing.

The Federal government cannot afford to fix all of the problems we face, but it also cannot afford to not show us how to fix some of the problems we face. We have built demonstration into this project for that very purpose.

In my first testimony before this committee in 1984, I made the statement that we do not want this project to become just another study of the problems on the Platte River system. You have graciously supported our efforts to this point, but if we stop here, we have just another study of problems on the Platte River. Granted we have gained much through study of these problems, and granted we must study before we act, and after extensive study, we still feel the project has much merit and merits the committees approval for full funding for construction.

I want to thank the Subcommittee on Energy and Water Development of the Appropriations Committee for their continued support and funding of the Platte River Bank stabilization project. I would also like to thank Congresswoman Viginia Smith for her support. She will be missed upon her retirement.

If there are any questions about my testimony, I will be willing to answer them at this time.

Mr. **Miller**. I wanted to add, you said we want to get it right after six times. But I fully enjoyed the opportunity to work with Mrs. Smith and I appreciate your dedication to the water resources throughout Nebraska and this country.

Although I am sorry I will not be able to appear on this committee with her sitting on it again, but I am looking forward to the next nine months of working with her.

Mrs. **Smith**. You will find a good friend always in John Myers.

Mr. **Myers**. I am sorry, I have to go to another committee.

Mrs. **Smith**. Your testimony was so important. Not only will this help the entire Platte River Basin but all the stream erosion problems all across the country.

They are very, very serious, and as you said, Dale, this will take us a long way toward finding solutions, solutions by using products that we can afford.

When you think as you said, Dale, losses of 175 acres a year, 5 to 10 feet deep, that is a very big loss multiplied all across the United States.

Then you made another comment that I want to stress. This is the only committee in the Congress where we come out for water development, which brings back monetary proceeds far exceeding what the government spends. The benefits of everything we have ever provided exceed the cost.

So it is an investment in America's future. Everything you have worked so hard for is all investment in the future of our country. Thank you for being here.

Wednesday April 4, 1990.

O'NEILL UNIT, NEBRASKA

WITNESSES

ALFRED T. DRAYTON, PRESIDENT, NORTH CENTRAL NEBRASKA RECLAMATION DISTRICT

CLARE EVANS, NORTH CENTRAL NEBRASKA RECLAMATION DISTRICT

Mrs. **Smith**. Now we go to the O'Neill Unit, Mr. Alfred T. Drayton, and Mr. Clare Evans.

You know for everybody in this room, by you are people who have put years of your lives to improve the water development in Nebraska , but I don't think anybody has been here who has put in more years than you have, Al, or than you have, Clare.

How many years have you worked on it?

Mr. **Drayton**. I suppose, 40.

Mrs. **Smith**. How about you, Clare?

Mr. **Evans**. That is crowding it.

Mrs. **Smith**. For all of us you put in years and years and we want to welcome you back.

We are glad to have you here.

You may proceed as you wish.

Mr. **Drayton**. I think a lot of your years have been spent helping. If we had not had the help in here——

Mrs. **Smith**. I have been working on it for 14 years sitting here, but you have been working on it for 40 out there.

Mr. DRAYTON. If we had not had you here we would have given up long ago, I am sure.

Every year we get some advantage after meeting with you. Your committee has been very good to us, too.

We appreciate every bit that they have done.

Mrs. SMITH. Our entire committee is very much for water development and we are very nonpartisan in our approach. We are trying to improve things across America.

You may proceed.

Mr. DRAYTON. You have been very kind and we appreciate it.

This summer the Bureau of Reclamation did some experimenting with recharge, quite a bit, in fact, north of Atkinson and northeast of O'Neill. They took water from irrigation wells and put it on meters so they knew exactly what each well was getting, each place they were putting it, how much went in.

Each place took the water real well. They would up spreading it over 300 or 400 feet from where they put it in. So it has been a very satisfactory test.

We do find the place we have to go to get the water is too far away and so we will probably have to find a closer source for water.

Mr. DRAYTON. But I think they may look into that this summer, this coming summer.

As far as the wells sticking to recharge, they are doing very well with it, and they are spreading it out over large area. So I don't think there is any problem left, except to getting this source of water, a different source.

Mrs. SMITH. Well, we appreciate hearing about this. I know this research is going forward, and it's very important research.

Mr. HILL. What have you to add?

Mr. EVANS. I have nothing more to add, except sincerely thank you, Mrs. Smith and the rest of the Members of the committee for all the support they have given us over the many years.

It's been mighty appreciated.

Mrs. SMITH. Well, you have might good friends on his committee, and I am sorry that they are not able to be here today.

It isn't that they don't want to be, but Mr. Bevill is making a speech on the Floor; Mr. Myers, as you know, is the Vice Chairman of the Ethics Committee, and he has to go; and everybody else is working on some other thing.

And to both of you I would like to have you put your complete statements in the record, so that we will have that for posterity.

And thank you so very, very much.

How many times have you appeared before this committee, Al?

Mr. DRAYTON. I have lost track.

Mrs. SMITH. I will tell you, you have been mighty welcome every time.

Mr. DRAYTON. Every time I was here, you and Mr. Myers were both present, and I hated to see him get up.

Mrs. SMITH. We are always present, and Mr. Bevill and some Members are nearly always present.

[The statement of Messrs. Drayton and Evans follows:]

North Central Nebraska
Reclamation District

O'NEILL UNIT
IRRIGATION
RECREATION
FLOOD CONTROL
FISH AND WILDLIFE
SOCIAL & ECONOMIC DEVELOPMENT

April 4, 1990

TESTIMONY OF ALFRED DRAYTON, PRESIDENT
NORTH CENTRAL RECLAMATION DISTRICT, NEBRASKA

AND

D. C. EVANS, VICE PRESIDENT AND SECRETARY-TREASURER
NORTH CENTRAL NEBRASKA RECLAMATION DISTRICT, NEBRASKA

SPONSORS OF THE O'NEILL UNIT, NEBRASKA
PICK-SLOAN MISSOURI BASIN DEVELOPMENT PROGRAM
PRESENTED TO THE SENATE AND HOUSE OF REPRESENTATIVES
APPROPRIATIONS SUBCOMMITTEES ON ENERGY AND WATER DEVELOPMENT

Thank you, Mr. Chairman, and members of this distinguished Appropriations Subcommittee on Energy and Water Development, for this opportunity to present testimony on behalf of the North Central Nebraska Reclamation District as sponsors of the modified and reformulated O'Neill Unit, Nebraska, Pick-Sloan Missouri Basin Development Program.

We have been privileged to work with this Subcommittee and to have its support since 1974. We are testifying in support of the President's fiscal-year 1991 budget request of $600,000 to continue the vitally important groundwater recharge verification study.

We wish to again make it unmistakeably clear that we still prefer the original, tried-and-true, fully tested, presently authorized project. As the Subcommittee knows, the original project, first authorized in 1954 and reauthorized in 1972, was a middle-sized, conventional multipurpose reclamation project. The Norden Dam and Reservoir were major features of the plan.

But since Nebraska support has become deeply divided for this original approach to development on the Niobrara River, we are glad to work with this Subcommittee, the authorizing Interior Committees of House and Senate, the State of Nebraska, and others to convert this into a workable, artificial groundwater recharge project.

President: Alfred Drayton
Directors: D. C. Evans, Harold Frickel, George Jamrozek, Louis Kliment, Jr., C. W. Ripley,
Clarence Gokie, Jr., Larry Gokie, Dale Roberts, Dennis Kliment, Robert Young, Paul Zakrzewski
Administrative Assistant: Allen Christensen

By letter dated March 1990, the Bureau of Reclamation provided us with a brief description of the agency's recharge program at the O'Neill Recharge Site. I ask permission to make this letter and accompanying map a part of the official record.

Our understanding is that tests of the recharge concept continue to produce promising results, and we continue to be hopeful that this approach to water storage underground will turn out to be less costly, less disturbing to the environment, but more beneficial to both humans and wildlife.

As this subcommittee knows from Bureau of Reclamation budget justifications, the preconstruction studies are being conducted under a memorandum of understanding between the Bureau and the Nebraska Natural Resources Commission.

The Bureau of Reclamation has conducted geological investigations and aquifer performance tests to define and evaluate specific sites as a groundwater source in the Niobrara River VAlley. The US Geological Survey is collecting groundwater quality data through an interagency agreement with Reclamation.

We are keenly aware that this Subcommittee has approved planning and construction funds for this project totaling $8,857,115 from fiscal year 1974 through fiscal year 1990. As we all know, litigation as well as planning and research have consumed the years and the money invested so far.

As the groundwater research proceeds, we are exploring opportunities to develop alternative crops for this region--alternatives to program crops such as corn, for example.

We are doing this because we assume there will be some restriction on the use of federal project water for production of crops for which the US Department of Agriculture sets acreage or other production limitations--surplus crops, in plain language.

We have experimented with dried field beans, potatoes, and other vegetables. While production of these and other specialty crops certainly is feasible, marketing and processing will continue to be problems to be overcome should the O'Neill Unit become a reality.

Congresswoman Smith's bill, HR 47, providing an institutional structure for developing and commercializing new industrial crops and new uses for old crops, is legislation containing hope for those of us sponsoring new reclamation construction. We hope that her bill, or major provisions thereof will be part of the 1990 farm bill.

We note that controversy bubbles anew in the Niobrara River Valley near the site of the O'Neill Unit. So far, only one of four bills being considered by the House Interior Subcommittee on National Parks and Public Lands would impact on the reformulated O'Neill Unit.

These bills would study or immediately designate a portion of the river as part of the National Wild and Scenic River System.

Congresswoman Smith has furnished us a copy of a March 29, 1990, letter to her from Commissioner Dennis Underwood of the Bureau of Reclamation analyzing these bills' impact on the O'Neill Unit. A copy of that letter is provided with our testimony for the record.

The key paragraph is:

> With one exception the proposed bills relating to designation of the Niobrara River as a Wild and Scenic River, S.280, H.R. 761, H.R. 3823, and H.R. 1673, will not have an impact on Reclamation's project activities or the management of its lands. The exception referred to pertains to H.R. 3823, which omits language that would allow Reclamation to construct a diversion dam and pumping station on the Niobrara River to provide water for an 8,000-acre tract in connection with groundwater recharge studies for the O'Neill Unit, Pick-Sloan Missouri Basin Program, Nebraska.

Final version of this legislation, of course, could be completely different.

In closing, we thank the Subcommittee again and again for its support through the years, and we hope and trust we will continue to have that support.

Without Congresswoman Smith on the House Subcommittee to guide us in the future, we will be depending more than ever on the House and Senate Subcommittee's leadership and understanding of the merits of the O'Neill Unit and its promise of hope for beneficial development for the region and the nation.

-END-

03/29/90 11:34 ☎ 3431370 MACH

United States Department of the Interior
BUREAU OF RECLAMATION
WASHINGTON, D.C. 20240

IN REPLY
REFER TO:

29 MAR 1990

Honorable Tom Bevill
Chairman, Subcommittee on Energy
and Water Development
Committee on Appropriations
House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

The following is the Bureau of Reclamation's response to the questions submitted for the record by Congresswoman Virginia Smith on four bills dealing with Wild and Scenic River status for the Niobrara River.

With one exception the proposed bills relating to designation of the Niobrara River as a Wild and Scenic River, S.280, H.R. 761, H.R. 3823, and H.R. 1673 will not have an impact on Reclamation's project activities or the management of its lands. The exception referred to pertains to H.R. 3823, which omits language that would allow Reclamation to construct a diversion dam and pumping station on the Niobrara River to provide water for an 8,000-acre tract in connection with groundwater recharge studies for the O'Neill Unit, Pick-Sloan Missouri Basin Program, Nebraska.

In connection with the Niobrara River, Reclamation's constituents are the water users associated with the proposed O'Neill Unit and the existing Ainsworth Unit and Mirage Flats Project.

We hope this information is helpful. Please feel free to contact me if I can be of further assistance to you on this matter.

Sincerely yours,

Dennis B. Underwood

cc: Congresswoman Virginia Smith

United States Department of the Interior
BUREAU OF RECLAMATION
NEBRASKA-KANSAS PROJECTS OFFICE
P.O. BOX 1607
GRAND ISLAND, NEBRASKA 68802

IN REPLY
REFER TO:
G-250

Alfred Drayton, President
North Central Nebraska Reclamation District
130 East Douglas
O'Neill NE 68763

Dear Alfred:

This is a brief description of our recharge program at the O'Neill Recharge Site.

A local irrigation well was used as our water source. This well was approximately one mile from the closest recharge site. This distance provided minimal influence between the pumping point and recharge point and provided water of similar quality and chemical makeup to that of the recharge sites. Clear or sediment-free water was used to prevent any plugging of the aquifer. This well was pumped at a rate of approximately 700 gallons per minute for 126 days.

Four recharge methods were utilized both at the O'Neill and Atkinson sites. The four methods were:

1. Recharge Line - a 1,000-foot long, perforated, 8-inch diameter corrugated plastic line was installed 6 feet deep within a gravel envelope.
2. Recharge Pit - a 100-foot long pit, 10 feet bottom-width and 2 1/2:1 side slopes; pit depth was 5 feet.
3. Unsaturated Recharge Well - a 20-inch hole was augered to within 1-2 feet of the groundwater table, then 8-inch PVC casing and screen were installed for the screened interval. Hole depth was 66 feet, the screened interval was 36-66 feet.
4. Saturated Recharge Well - a 20-inch hole was drilled using standard methods for irrigation wells to a depth of 100 feet. Eight-inch PVC casing and screen were installed; the screened and gravel packed interval was from 65-100 feet and below the groundwater table.

Eight to 10 observation wells to monitor the effects of the recharge water were installed at each recharge site. These wells were generally 2-inches in diameter; one well at each recharge method was 5-inches in diameter. Groundwater samples were taken from these 5-inch wells on a monthly basis to monitor groundwater quality.

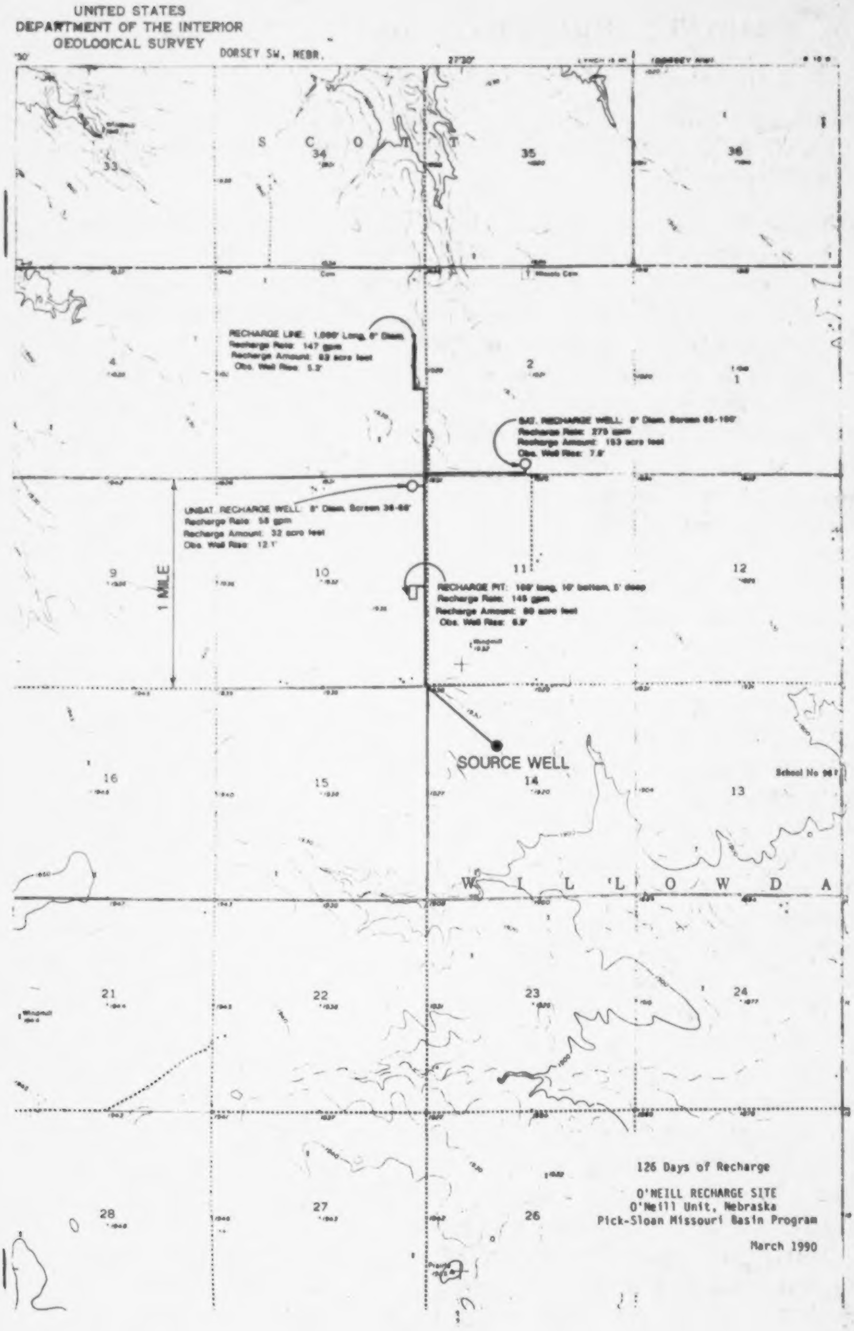
Depth to groundwater is 65-70 feet at the O'Neill site and 30-35 feet at the Atkinson site. Geologic conditions were similar at both sites. There are 2-3 feet of topsoil, then 90± feet of permeable sand. At a depth of 90-100 feet is the Ogallala Formation, which in this area is fine sand and silt. Our recharge was directed toward the thick sand interval above the Ogallala Formation.

At the O'Neill site, a total of about 350 acre feet of groundwater was achieved. The recharge line, recharge pit, and unsaturated recharge well all performed fairly equal, while the unsaturated recharge well sustained a lower recharge rate. The algae growth began occurring in the recharge pit at the O'Neill site about 90 days into the test and lowered the permeability of the bottom of the pit. Algae growth began occurring at the Atkinson site after about 60 days and also lowered the permeability of the bottom of the pit. The difference in time between the pits is attributed to more nitrates in the Atkinson recharge water and the shallower water level maintained in the pit.

Sincerely,

Larry

Larry D. Cast
Geologist


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
DORSEY SW, NEBR.
27'30"
S C O T T
33
34
35
36
4
2
1
RECHARGE LINE: 1,000' Long, 8" Diam.
Recharge Rate: 147 gpm
Recharge Amount: 83 acre feet
Obs. Well Rise: 5.3'
SAT. RECHARGE WELL: 8" Diam. Screen 65-100'
Recharge Rate: 275 gpm
Recharge Amount: 153 acre feet
Obs. Well Rise: 7.8'
UNSAT. RECHARGE WELL: 8" Diam. Screen 36-66'
Recharge Rate: 58 gpm
Recharge Amount: 32 acre feet
Obs. Well Rise: 12.1'
9
10
11
12
1 MILE
RECHARGE PIT: 100' long, 10' bottom, 5' deep
Recharge Rate: 145 gpm
Recharge Amount: 80 acre feet
Obs. Well Rise: 6.9'
Windmill
SOURCE WELL
16
15
14
13
School No 96
W I L L O W D A
21
22
23
24
Windmill
28
27
26

126 Days of Recharge

O'NEILL RECHARGE SITE
O'Neill Unit, Nebraska
Pick-Sloan Missouri Basin Program

March 1990

WEDNESDAY, APRIL 4, 1990.

FARWELL IRRIGATION DISTRICT, NEBRASKA

WITNESS

THOMAS KNUTSON, GENERAL MANAGER, LOUP BASIN RECLAMATION DISTRICT AND FARWELL AND SARGENT IRRIGATION DISTRICTS, FARWELL, NEBRASKA

Mrs. SMITH Now we will turn to panel nine for the Farwell Irrigation District. Tom Knutson, where are you, Tom?

I am afraid you are a panel all by yourself, but that's all right. You are a powerful panel. We are so glad that you are here.

Mr. KNUTSON. Mr. Chairman and Members of the committee. My name is Tom Knutson, and I am General Manager of the Loup Basic Reclamation District, as well as the Farwell and Sargent Irrigation Districts in Farwell, Nebraska.

The Farwell Unit is a project that is located in the central part of Nebraska in Howard and Sherman Counties and provides water to 50,051 acres of land.

Construction of the unit was initiated in 1959 and completed in 1966. Irrigation water deliveries began in 1963 and water was available to the entire project by 1966. The operation of the project was turned over to the districts in 1966.

While the Farwell Unit has provided many benefits to Howard and Sherman Counties, it has, however, had some very negative impacts which we want to discuss with you today. The project was constructed, as was the practice in that period of time, without any lining of the canals or laterals; thus, only about 55 percent of the water that was diverted from the Middle Loup River is delivered to the farmers at the turnout.

The water not delivered is lost primarily through seepage from the canals and laterals back into the groundwater table causing us numerous problems in the region.

We wish to thank the committee and the Congress for their past support in funding to help correct the problem. We request and urge the committee to support the President's request of $460,000 for fiscal year 1991 for the Farwell Unit so that we can continue to correct the problem.

The dollars appropriated for fiscal year 1990 were used to convert 13 miles of lateral into pipe. At this time, we have approximately 100 miles of the District laterals in pipes, thus reducing the seepage from those laterals to zero.

We estimate that approximately 100 additional miles could be converted to pipe if funds were made available. The dollars requested for fiscal year 1991 would be utilized for that continued effort.

This water conservation initiative which started a number of years ago, has provided the District a tremendous savings in water, as well as a maintenance cost savings. The Congress and its support has played a very positive role in that regard, and we applaud them for their support.

The Sargent Unit is a project that is located in Custer and Valley counties, and it provides water to 13,922 acres. Construction of the system began in 1955 and was completed in 1959.

The project was constructed, as was the practice in that period of time, without any lining of the canals or laterals. The water losses in diversions from the Middle Loup River have averaged about 40 percent in the last 10 years.

The water users desire to have their laterals buried in pipe which would enable them to save water through the use of gated pipe for field deliveries. The Sargent Board of Directors feels the same way, and last summer they requested the Bureau of Reclamation to prepare a Rehabilitation and Betterment (R&B) report for the purpose of obtaining a loan.

The pipe lateral program would definitely constitute an improvement and betterment of the project's distribution system which includes about 45 miles of laterals. These laterals were constructed 32 years ago, well before the extensive use of polyvinyl (PVC) pipe.

The existing open-ditch laterals require a large annual expenditure for weed control chemicals, as well as frequent cleaning and repairs. In addition, these laterals are highly susceptible to livestock damage.

The proposed rehabilitation and betterment program does not result from a lack of adequate maintenance activities by the irrigation district. In fact, the facilities are presently in good condition, and the district has consistently achieved a satisfactory level of maintenance of the transferred project facilities. We wish to assure the committee of that fact.

The cost of implementing the rehabilitation and betterment program presently exceeds the financial resources of the district except as a long-term obligation. The only revenues the district receives are from the water users. By obtaining Federal financing, the district could complete an R&B program.

The Sargent Irrigation District respectfully requests the committee to include $200,000 in the fiscal year 1991 budget for the Sargent Unit. The Bureau officials involved in the study indicate that it would take about $2 million to complete the rehabilitation effort. The Bureau report will be done in the very near future.

If dollars are appropriated and made available to the district, they will utilize their own staff for installation of the pipe. In addition, the district would raise their water rates to the level required to repay the loan. Again, the district respectfully requests the committee to include $200,000 in the fiscal year 1991 budget for the Sargent Unit.

We thank you, Mr. Chairman, and Members of the committee for your support for the Farwell Unit. It means a lot to those of us in the Loup Basic Reclamation District in Nebraska.

In addition, we would like to publicly thank Congresswoman Virginia Smith for her dedication and hard work for the people in her district during the past 15 years that she has served in Congress.

We want to recognize her efforts on our behalf in working with this committee. I am sure that the committee will miss her services as much as those of us from Nebraska will.

Thank you, Virginia, and thank you, Mr. Chairman.

[The statement of Thomas Knutson follows:]

LOUP BASIN RECLAMATION DISTRICT
BOX 137
FARWELL, NEBRASKA 68838

March 30, 1990

The Honorable Tom Bevill, Chairman
Subcommittee on Energy and Water Development
House Committee on Appropriations
2362 Rayburn House Office Building
Washington D.C. 20515

Dear Mr. Chairman:

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Sincerely,

Thomas Knutson
General Manager

Mrs. **Smith**. Thank you, Tom.

Do you have anything to add, Dick?

Mr. **Grant**. No. Tom has pretty well summarized it.

Wednesday, April 4, 1990.

SHERMAN DAM DRAINAGE SYSTEM, NEBRASKA

WITNESS

HARRY KNECHT

Mrs. **Smith**. Now I would like to call up the Sherman County folks, Harry Knecht. Harry is a panel all by himself, but he is also a powerful panel.

Mr. **Knecht**. I don't know about powerful, Virginia, but I have been a real close friend of Virginia's for a long time, and I want to thank you, Mr. Chairman, for listening to me.

I am just a retired businessman. I am no attorney, and I am no public speaker, but about 18 months ago, we had some 19 farmers that's really got a water problem. So they come to me and want to know if I could have a meeting with Virginia Smith.

Where do we have it, so I called her up and she come to our house and met with 19 farmers and their wives. And they do really have an underground water problem, and it's all caused from Sherman Reservoir.

The reason I know is because I was Mayor of the city for two terms, and in 1970, we had one whole block of our sanitary sewer just cave in the ground. And I don't know what we spent on it, but finally we got a hold of Virginia and the Department of Interior, and they came to the city and put two drains underneath Loup City.

But it took us quite a while, and they got them all in. And it's solved our underground water problems. They drained our water level back down to eight feet. It was up to three feet. We had sewer in people's basements. We pumped sewer day and night for two years, and you don't think that's a problem, you ought to be mayor.

I wanted to take my phone out. Every morning I got sewage in my basement. I said, my God, bear with me. I am in trouble, too.

But anyhow, when they admitted it was on account of Sherman Reservoir, they did come and put us two drains in, and they have done a real good job. And it was real nice to work with and we do—we have got 19 farmers that is getting water problems, and they are really getting them.

There is 568 acres of land what they call Class I land down the middle of the valley that is land that was classed as Number 1. It was to be assessed today at the new rules that Nebraska has, $1180 an acre.

It's assessed at $20 an acre. So you can see what it's costing Sherman County and the school district in taxes. And I believe except for one farm, Al Augustine, he lives north of Loup City, he's lived on that farm back in the 1930s, and he's a good farmer.

He also had raised from 125 to 175 bushels of corn every year. He's got 30 acres of land at $20 that used to make 150 bushels an acre of corn and just saved $2 a bushel.

And he was the first one that had problems. His started in 1978. He had a little pond. He didn't think much about it, but it's growed and it's growed to three acres.

You take 30 acres of corn, that is a lot of money to a farmer. And I have—there is 19 more. We have one farmer that has bought a piece of land here about 12 years ago south of Loup City. He give a thousand dollars an acre for it. And I doubt if he could sell it for a hundred today.

And that is really about—Virginia, I have to thank Virginia Smith. She's worked with these people. She's wrote letters. She's called me up, and I am going to miss her greatly.

And I want to thank you.

[The statement of Harry Knecht follows:]

SHERMAN DAM AND RESERVOIR SEEPAGE

Sherman Dam and Reservoir was constructed in the early 1960's and initial filling began in 1962. A large mound of groundwater has developed over the years from reservoir seepage. The city of Loup City, Nebraska, experienced problems with high groundwater and the Bureau of Reclamation constructed subsurface drains in and north of the city in 1974. This seepage mound has expanded outward and is now influencing the water table of the flood plain of the Middle Loup River Valley for several miles to the north and south of Loup City, Nebraska. Several areas are experiencing groundwater levels at the ground surface resulting in crop production loss.

During 1980, a study of the seepage mound from Sherman Reservoir was conducted by the Bureau of Reclamation. The results of that study, which included a groundwater computer model verified by field data, conclude that a major portion of the groundwater subsurface flows in this area of the Middle Loup Valley are a result of the seepage mound out of Sherman Reservoir. While there are other contributing factors to the groundwater flows, none have the same impact as the seepage mound.

Alternatives to reduce the seepage mound have been analyzed by the Bureau of Reclamation groundwater model, and to date the only viable options are: (1) The construction of subsurface drains to control the groundwater buildup and return crop productivity for years to come, or (2) for the Bureau of Reclamation to purchase the land and maintain these created wetlands. As a group of landowners, we would not choose to sell our lands for wetland use.

The valley area of the Middle Loup River already supports several natural wetland areas. A few drains have been installed by local landowners using private contractors. These drains, however, were not properly designed giving consideration to the soils and other factors in the area, and did not work. In order to insure a proper relief drainage system, some time and effort has to be spent on investigation and design.

Since this seepage problem is a result of the Sherman Reservoir, we are requesting help from the Farwell Irrigation District and the Bureau of Reclamation to correct the high groundwater areas. This help would be in the form of drainage investigations, design, and construction to return the productivity of the land. The President's budget request for Fiscal Year 1991 does not include any funds to correct this problem. We are requesting a write-in of $270,000.00 for fiscal year 1991 to begin the correction of these seepage problems. This would allow the Bureau of Reclamation to begin construction of some subsurface drains in 1991. Funding for at least the next three fiscal years will be required to complete the correction of the damaging effects of the seepage mound from the Sherman Reservoir.

This seepage problem has been occurring for several years and we have been very patient in seeking help with the situation. However, with the drought and the general farm economy, this patience is wearing thin. The seeped areas have been growing in size every year for quite some time and now there are approximately 400 acres out of production. We request immediate assistance to help correct the seepage problem on our lands.

OFFICE OF

COUNTY ASSESSOR

SHERMAN COUNTY

TO WHOM IT MAY CONCERN:

The following is a partial listing of the number of acres damaged by the high water table in Sherman County, Ne., according to the County Assessor's records:

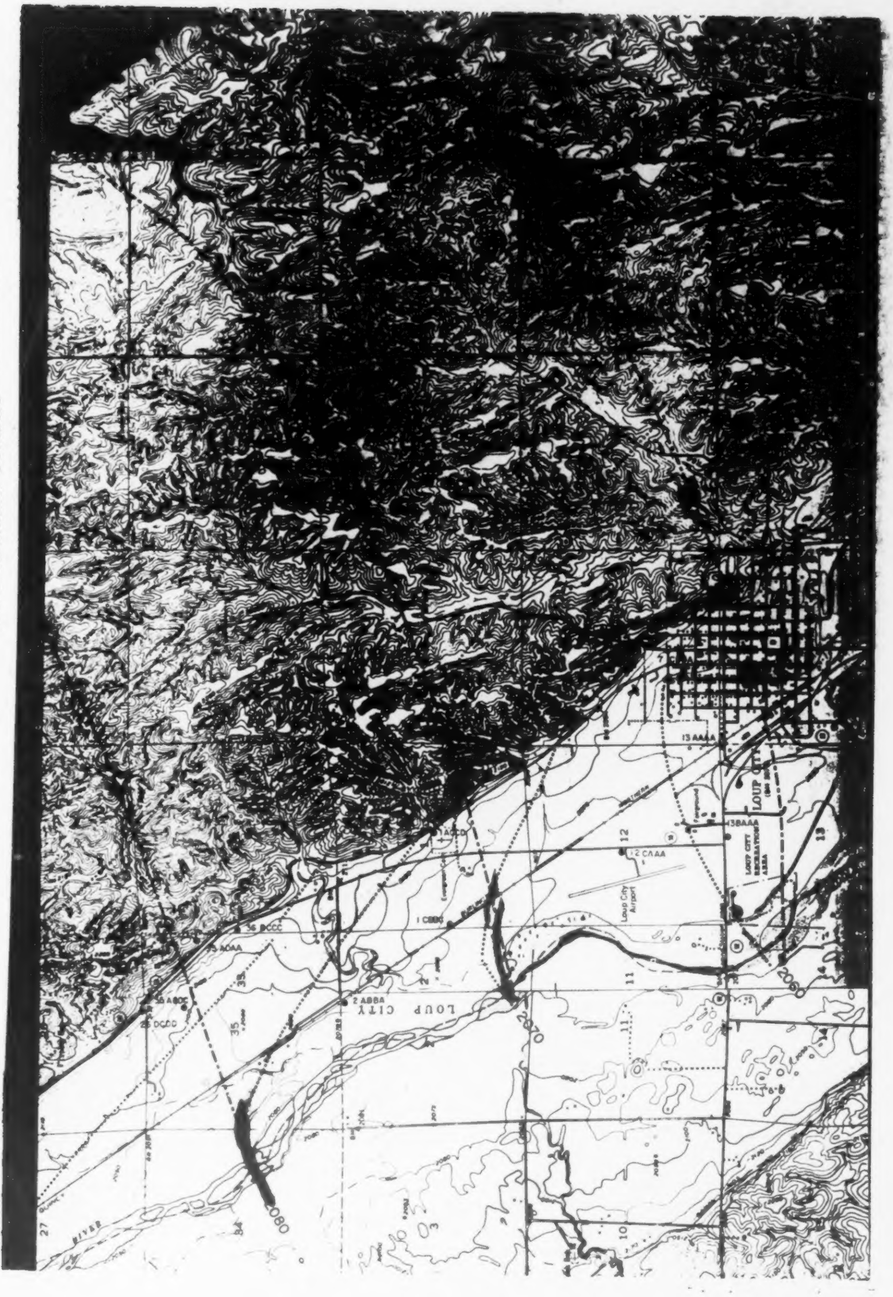
	Acres
Al Augustyn	40
L. Zwink	40
E. Kieborz	26
G. Daddow	10
J. Heil	150
J. Placek	25
E. Norseen	92
W. Heil	44
K. Goc	13
L. Heil	35
E.Criffield	58
F. Carpenter	36
	569

LOUP CITY, NEBRASKA

Mar. 29, 1990

Janice Robertson

Janice Robertson
COUNTY ASSESSOR


LOUP CITY
Loup City Airport
LOUP CITY RECREATION AREA
13AAAA
13BAAA
12CAAA
1CBBC
2ABBA
36DCCC
2080
2070
2060
RIVER
12
11
13
35
34
10
27

1963 Groundwater Contours - - - - - - - - 1988 Groundwater Contours ————————

Mrs. SMITH. Thank you so much for being here, Harry. I understand perfectly why they came to you and said, "You have got to go and be our spokesman."

We have just one more panel from Nebraska, but before I call them up, Mr. Bevill, I wanted to say this after you came back. I am going to miss being on this committee with all of you, my colleagues, and having these folks come in, more than anything else, I think, about being in the United States Congress.

I am so proud of this room full of people. You know that many of them have worked 20, 30, Mr. Drayton has worked 40 years, on water projects, and I think this room is better looking today than I have seen it since one year ago, when they were here before.

So I would just like to ask them to stand up again so you can see everybody who is here from Nebraska.

Mr. BEVILL. You are a great group, and I don't have to tell you you have got the greatest representative in Washington. You know that, and I don't know of anybody that is more effective and accomplishes more than Virginia Smith.

And we on this panel are certainly going to miss her, like you are going to miss her representing you. She's been a great inspiration to all of us on this panel, and we love to work with her. And we haven't given up yet. We are still trying to get her to reconsider, but thank you for coming. We appreciate it.

This, obviously, demonstrates a lot of interest in these projects that you have testified about here, and of course, this panel is very impressed with it.

And your names, every one, will be in the record. Virginia Smith will see to that. And showing local interest is very important. So thank all of you and if you can persuade Virginia to come back, we would be happy, too.

Mrs. SMITH. Thank you.

Thank you for those words. And I want to tell all of you that it was just a year ago today when you were in this room and I had to rush over to the Senate to protect my constituents up in the Niobraro River Valley who were having the City Congressman poke a scenic river bill down their throats that they didn't want.

And so I am thankful, and many of you told me afterwards how nice Mr. Bevill was to you—and Johnny Myers and all the rest of the folks—and they appreciated it very much, Mr. Bevill.

Of course, the scenic river is hotter than ever, but at least not today; we can be here today. And I wanted to say to you, Mr. Chairman, that out in our district, we are doing some very innovative things in the Prairie Bend Unit, and I think we have done an outstanding job of carrying forward in water development.

You know now more than 80 percent of our row crops are under irrigation, and I will tell you, I have been so proud and happy to work with you on this committee for the last 14 years, and I am going to miss you.

WEDNESDAY, APRIL 4, 1990.

PRAIRIE BEND PROJECT AND WOOD RIVER FLOOD SURVEY, NEBRASKA

WITNESSES

RON BISHOP, GENERAL MANAGER, CENTRAL PLATTE NATURAL RESOURCES DISTRICT

RICHARD MERCER, CHAIRMAN, WATER RESOURCES COMMITTEE, CENTRAL PLATTE NATURAL RESOURCES DISTRICT

CARL GANGWISH, CHAIRMAN, CENTRAL PLATTE NATURAL RESOURCES DISTRICT

RON HARGENS, PRESIDENT, CENTRAL NEBRASKA CONSERVATION ASSOCIATION

DOUG THOMPSON, DIRECTOR, CENTRAL NEBRASKA CONSERVATION ASSOCIATION

JOHN TARRELL, SECRETARY, CENTRAL PLATTE NATURAL RESOURCES DISTRICT

Mrs. SMITH. And now I want to call up the last panel, another very important panel, the Prairie Bend Unit: Ron Bishop, Dick Mercer, Carl Gangwish, Ron Hargens, Doug Thompson, and John Tarrell.

Mr. BISHOP. My name is Ron Bishop, and I am Manager for the Natural Resources District.

The two fellows on each side of me are also directors for the Central Platte Natural Resources District. They are land owners and operators out in Prairie Bend project area.

I understand your busy schedule today. I notice we are running a little behind, and so I am going to try to keep you from getting any further behind.

I do want to say that we have submitted for the record three pieces of testimony. I would like to go over them very briefly, and then confine my last minute or two to some new things that have developed in the Prairie Bend project that this committee has been so helpful in getting the feasibility completed.

The first piece of testimony dealt with the U.S. Army Corps of Engineers on some flood control studies that they are doing out in our area. I want to indicate that we strongly support the fund that are in the Administration's budget for continuing or finishing up that feasibility study on Wood River out in the Central Platte area.

The second item deals with groundwater recharge demonstration program. And we strongly support that program. The Administration's budget calls for some four-and-a-half million. It would be our suggestion that you strongly consider increasing the 1991 appropriation to $10 million, and we also support those others from Nebraska who have testified.

And I am sure from across the western United States, who have testified that the overall budget that was originally envisioned of some $20 million, it ought to be increased in the area of $30 million in order to be able to carry out the 20 or 21 recharge demonstrations that were envisioned in that original authorization.

We are appearing before the committee again this year regarding the Prairie Bend project. We are requesting $200,000 be added to the budget for fiscal year 1991 for advanced planning on that project.

We are very happy to report the Bureau of Reclamation has completed the feasibility study. They have identified a number of features that are feasible to carry that project out.

The next step, of course, would be the advanced planning. We are asking you to seriously consider adding $200,000 to fiscal 1991 budget so that that can be gotten underway, and it makes good economic sense to include it in next fiscal year because some of the key individuals who have been involved since 1983 are still in the Grand Island Office.

They could be utilizing that advanced planning. If that advanced planning money isn't added, there's a very good chance that those key individuals who have all the background will be transferred to another location, and then in a year or so, when we do start that advanced planning, we would have to bring in new people who don't have the background. And it would be not very cost efficient.

So we would hope that you would strongly consider that. That Prairie Bend project, as I indicated, the Bureau of Reclamation has completed the feasibility study, and they have identified a feasible project there.

Our board just within the last few days has taken a position on that project. The Bureau, when they looked at what needed to be done, what could be done, and looked at the cost in the area, identified several different alternatives.

Our Board has taken a position that the project that we think that should be pursued at this time is a scaled-down version from the maximum project that was envisioned.

They identified a project out there that had a price tag of right at $450 million that would address environmental issues. It would address water quality issues, would address groundwater decline, recreation, and a whole host of water-related activities.

The scaled-down version that we are supporting and will be working with the good congresswomen to get the legislation to fit that project is scaled down from $450 million to $150 million. It still is the heart of the most feasible, most beneficial parts of all the features that were identified by the Bureau of Reclamation.

It covers environmental needs on the Platte River with some 14,000 acres of management areas that would be developed and operated for fish and wildlife benefits, and especially the threatened and endangered species.

It also includes the groundwater recharge to protect the economy in the area. No new land would be brought under the irrigation, but those that have already been developed would be protected from reverting back to dry land and being very detrimental to the economy of not only central Nebraska but the State of Nebraska.

It also would address the groundwater quality problems that we have within that Central Platte area and provide some needed recreation as a side benefit.

The project is the—or the features that we have selected are the most feasible and the most beneficial parts of all the features that were identified, and so we are asking you to consider adding the $200,000 in fiscal 1991 budget so that we can get on with the final design on those features that we feel are most beneficial and hope to be seeing you again next year asking you for some additional advanced planning monies so that we can continue that work that hopefully will be started in fiscal 1991.

I thank you for your time, and we will be glad to try to answer any questions, if there are any.

[The statements of Ron Bishop follow:]

Testimony

by

Central Platte Natural Resources District

Grand Island, Nebraska

to:

United States House of Representatives

House Committee on Appropriations

Subcommittee on Energy and Water Development

The Honorable Tom Bevill, Chairman

REQUEST:	**$178,000.00 for Fiscal 1991**
PURPOSE:	**Feasibility Study by U.S. Army Corps of Engineers**
PROJECT:	**Flood Control for Wood River and Upper Warm Slough at Grand Island, Nebraska**
LOCATION:	**Hall and Merrick Counties in Nebraska**
PROJECT PURPOSE:	**Flood Control**

Mr. Chairman....Committee Members:

My name is Ron Bishop and I am General Manager for the Central Platte Natural Resources District. Our Central Platte Natural Resources District covers part or all of the ten counties in south central Nebraska that encompass the Platte River and its drainage areas along a 175-mile stretch extending from Gothenburg, Nebraska, on the west to Columbus, Nebraska, on the east.

Several areas within our Natural Resources District are subject to severe flooding. One such area is the City of Grand Island in which approximately 30 percent of our District's population resides. Flooding from the Wood River in the Grand Island area occurs about every two years. The 1967 Wood River flood caused an estimated $12,500,000.00 damage in Grand Island according to the U.S. Army Corps of Engineers.

The Corps recently completed a reconnaissance study that identified a potentially feasible solution to the flooding problems on the Wood River and associated drainages in Grand Island. The possible solution would consist of a diversion channel to divert flood waters from the Wood River away from the City of Grand Island and then release it into the Platte River. This plan would protect Grand Island from a one hundred year flood event on the Wood River.

The Corps estimates that the plan would cost $4,727,000.00, provide $1,995,500.00 in annual benefits and have a benefit-cost ration of 5.4 to 1. In Grand Island the plan would reduce flood damages to over 1300 structures in the flood plain and would reduce average annual flood damages of 95 percent. The plan would also reduce flooding to thousands of acres of agricultural lands downstream from Grand Island.

We are most anxious to see a project constructed that will resolve the flooding problems in Grand Island and therefore, strongly support the $178,000.00 included in the administration's budget for the U.S. Army Corps of Engineer's Wood River flood survey at Grand Island and would like to request your support and assistance in seeing that those funds remain in the budget.

Thank you.

Testimony

by

Central Platte Natural Resources District

Grand Island, Nebraska

to:

United States House of Representatives

House Committee on Appropriations

Subcommittee on Energy and Water Development

The Honorable Tom Bevill, Chairman

REQUEST:	$10,000,000.00 for Fiscal 1991
PURPOSE:	Construction
PROJECT:	21 Groundwater Recharge Demonstration Projects (PL-98-434)
LOCATION:	Western States of U.S.A.
PROJECT PURPOSE:	Research and demonstration of groundwater recharge for irrigation, stabilization of groundwater levels, enhancement of groundwater quality, small community and rural domestic water supplies and other purposes.

Mr. Chairman....Committee Members:

My name is Ron Bishop and I am General Manager for the Central Platte Natural Resources District. Our Central Platte Natural Resources District covers part or all of the ten counties in south central Nebraska that encompass the Platte River and its drainage areas along a 175-mile stretch extending from Gothenburg, Nebraska, on the west to Columbus, Nebraska, on the east.

Groundwater plays a critical role in the economic well-being of our District as well as our State. Within our District alone we have over 700,000 acres of cropland irrigated with groundwater. In addition, each of the 120,000 residents of our District rely upon groundwater for their drinking water supply.

The groundwater levels, however, have been declining causing an increase in pumping costs and an accompanying reduction in well production. The current groundwater level declines are predicted to increase over the next twenty to thirty-five years to the point where thousands of irrigated acres will revert to dryland without some kind of a supplemental supply project.

Additionally, groundwater quality problems have developed in the eastern half of our District to the point where a number of municipalities have had to abandon wells because the nitrate levels exceeded the U.S. Public Health Service's published maximum safe level for human consumption.

These and similar problems are not uncommon in Nebraska nor for that matter, across the western United States. We, therefore, are very much interested in the groundwater recharge demonstration program outlined in PL98-434. The research and demonstration of groundwater recharge techniques for irrigation, stabilization of groundwater levels, enhancement of groundwater quality, small community and rural domestic water supplies as well as other purposes is a worthwhile activity if we are to address the growing groundwater problems of the United States. We, therefore, strongly support and concur with the administration's proposal for the inclusion of funds in the fiscal 1991 budget for the Bureau of Reclamation's Groundwater Recharge Demonstration Program (PL98-434). The funding level proposed by the administration is, however, inadequate and should be increased from the proposed $4,500,000.00 to $10,000,000.00 for fiscal 1991. In addition, the overall budget for the life of the program needs to be increased from $20,000,000.00 to $29,000,000.00.

We would like to request your support and assistance in seeing that these fund levels get included in the final budget.

Thank you.

Testimony

by

Central Platte Natural Resources District

Grand Island, Nebraska

to:

United States House of Representatives

House Committee on Appropriations

Subcommittee on Energy and Water Development

The Honorable Tom Bevill, Chairman

REQUEST:	$200,000.00 for Fiscal 1991
FUNDING PURPOSE:	Advanced Planning by U.S. Bureau of Reclamation
PROJECT:	Prairie Bend Unit Water Resources Project
LOCATION:	Dawson, Buffalo and Hall Counties in Nebraska
PROJECT PURPOSE:	Irrigation, stabilization of ground water levels, enhancement of water quality, small community and rural domestic water supplies, fish and wildlife habitat, flood control, public outdoor recreation and other purposes determined to be appropriate.

Mr. Chairman....Committee Members:

My name is Ron Bishop and I am General Manager for the Central Platte Natural Resources District. Our Central Platte Natural Resources District covers part or all of the ten counties in south central Nebraska that encompass the Platte River and its drainage areas along a 175 mile stretch extending from Gothenburg, Nebraska on the west to Columbus, Nebraska on the east.

A number of serious problems and critical needs relating to water exist within our Natural Resources District area. The economy of the area and the well-being of the people residing therein is dependent on irrigated agriculture with the primary source of irrigation water being ground water.

The ground water levels, however, have been declining, causing an increase in pumping costs and an accompanying reduction in well production. The current ground water level declines of up to 25 feet are predicted to increase over the next 20 to 35 years to the point where thousands of irrigated acres will revert to dry-land without some kind of a supplemental supply project.

Additionally, each and every one of the over one hundred thousand residents within our Natural Resources District gets their drinking water supply from ground water but ground water quality problems have developed in the eastern half of our District to the point where a number of municipalities have had to abandon wells because the nitrate levels exceeded the U. S. Public Health Service's published maximum safe level for human consumption.

The area is also subject to infrequent but severe flooding. The single flood event of June 1967 caused over $30,000,000.00 worth of damage in the eastern half of our Natural Resources District alone.

In addition to those three major problems there are also some needs related to water within our area.

First of all, there is a need to maintain adequate habitat for the waterfowl, fish and wildlife that currently utilize the area. The Big Bend area of the Platte River Basin in Nebraska plays host to several million migratory waterfowl each and every year.

There is also a need within our area for water based recreation facilities for our residents and the other residents of central Nebraska.

Senator James Exon, the late Senator Edward Zorinsky, former Senator David Karnes, Congresswoman Virginia Smith and our Natural Resources District along with several other agencies, organizations, groups, associations and individuals have been working for a number of years toward getting a water resources project implemented in the area that would resolve those problems and address those needs.

Thanks to the foresight of this committee we were successful in getting the necessary authorization and funding to enable the U.S. Bureau of Reclamation to conduct a feasibility study on the project area and develop a plan to address the many problems.

To help reduce the Federal expenditure, our Central Platte Natural Resources District transferred $240,000.00 to the Bureau of Reclamation for the feasibility study efforts. In addition to the cost-share funds, there has been an even larger amount provided in in-kind services in the form of research, studies and data collection. These in-kind services have been provided not only by our Natural Resources District and the local sponsors, but also by State of Nebraska agencies and other interested groups.

An example of the in-kind services, research and studies that have been useful in developing the plan and conducting the feasibility study are the seven items listed below that were conducted by our Natural Resources District:

(1) **Water Quality Studies.** The water quality studies and programs that have already been conducted will be beneficial to the planning of the water resources project as it relates to identification of water quality problem area, extent of the problem and effective methods of improving the ground water quality.

The local people, through our Central Platte Natural Resources District, have provided over $400,000.00 in cash toward those studies to date, in addition to the hundreds of man hours involved.

The additional funding by the State of Nebraska toward those studies has been approximately equal to the $400,000.00 local contribution.

(2) **Ground Water Model.** Our Central Platte Natural Resources District and the Lower Loup Natural Resources District, which borders us on the north, under contract with the U.S. Geological Survey, has developed a detailed ground water flow model of the ground water basin lying between the Loups and Platte River from the Lincoln-Dawson County line eastward, which encompasses the proposed project area.

The approximate cost of this ground water flow model is $120,000.00 with the cost being shared on an approximate 50-50 basis between U.S. Geological Survey and the districts.

The ground water model was available as a planning tool in evaluating the various alternatives available for the water resources project.

(3) **Study of Engineering Alternatives.** Our Natural Resources District contracted with the Denver, Colorado office of the engineering firm of CH2M Hall to look at various project alternatives available to the local people. One set of alternatives the firm evaluated was the physical or engineering alternatives available to address the water supply needs of the project area.

(4) **Study of Financial Options.** Another set of alternatives evaluated by CH2M Hill firm were the options available to the local people for financing or assisting in the financing of the water resources program.

(5) **Study of Institutional Options.** The third set of alternatives evaluated by CH2M Hill for the District were the options available to the local people for establishing an organization to develop, manage and operate a water resources program.

The studies by the private firm of the engineering alternatives along with the study of the financial and institutional options was done under contract to, and paid for by, the Natural Resources District at a cost of approximately $35,000.00.

(6) **Hydrologic and Water Resources Investigation.** The engineering firm of Henningson, Durham and Richardson from Omaha, Nebraska conducted an investigation of the water availability in the Platte River and the preliminary water needs of the proposed project area. The investigation and studies by Henningson, Durham and Richardson were done under contract to, and paid for by, local interests at a cost of approximately $23,000.00.

(7) **Ground Water Declines And Increased Pumping Costs.** The Central Platte Natural Resources District conducted an investigation of declines and increased pumping costs in the two level aquifer area of the Prairie Bend Project. The investigation was conducted by staff of the Natural Resources District at an estimated cost of $15,000.00.

All of the data from these studies and the other studies conducted by, or with assistance of other groups, enable the Bureau of Reclamation to progress to the point where the Bureau has now completed the planning report and sent it forward to Washington. The plan that the Bureau has developed for the Prairie Bend Unit is physically, economically and environmentally feasible and will provide not only the means to resolve the water problems within the Prairie Bend area, but would also provide the means by which to resolve the fish, wildlife and environmental concerns on the Platte River.

We will be working closely with our Congressional Delegation and hope to have legislation that has already been introduced, passed yet this year that would authorize this very important multi-purpose project.

We are now ready for advanced planning and are requesting $200,000.00 in advanced planning funds for fiscal 1991.

A lack of federal funding for fiscal 1991 disrupts the planning process and it would prove to be economically inefficient. There is always a certain amount of lost time and effort whenever you start back up after a shutdown. That would occur without the advanced planning funds we are requesting. An equally serious result of a stop in the planning would be the loss of some of the planning team. With no funds for fiscal 1991, key members of the planning team for the Bureau of Reclamation would be assigned to other jobs, most of which would be in other areas, and the experience, knowledge and background that they have developed on the project and the river would be lost. Such an approach would be inefficient use of time and of federal, state and our local funds.

For those and a number of other reasons, we feel it is critical that $200,000.00 be added to the federal fiscal 1991 budget for "advanced planning" efforts by the Bureau of Reclamation for the Prairie Bend Unit. We would like to request your support and assistance in getting that done.

We would hope that you would all lend your strong individual and committee support so that the Bureau of Reclamation can do the advanced planning of the Prairie Bend Unit that we so earnestly need.

Thank you.

[The statement of Rodney K. Gangwish follows:]

TESTIMONY
BY
RODNEY K. GANGWISH
SHELTON, NEBRASKA
TO:

UNITED STATES HOUSE OF REPRESENTATIVES
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
HOUSE COMMITTEE ON APPROPRIATIONS
THE HONORABLE TOM BEVILL, CHAIRMAN

REQUEST:	$200,000.00 for Fiscal 1991
FUNDING PURPOSE:	Advanced Planning by U.S. Bureau of Reclamation
PROJECT:	Prairie Bend Unit Water Resources Project
LOCATION:	Dawson, Buffalo and Hall Counties in Nebraska
PROJECT PURPOSE:	Irrigation, stabilization of ground water levels, enhancement of water quality, small community and rural domestic water supplies, fish and wildlife habitat, flood control, public outdoor recreation and other purposes determined to be appropriate.

Mr. Chairman....Committee Members:

I would like to take this opportunity to submit written testimony in support of advanced planning funds for the Prairie Bend Unit being planned by the Bureau of Reclamation.

I am a landowner and live two and a quarter miles south, and two and a quarter miles west of Shelton, Nebraska, within the boundaries of the proposed Prairie Bend Unit and am actively engaged in a farming partnership with my brother.

I wish to convey to you a growing concern on the part of myself and my neighbors about the future of irrigated agriculture in our area.

We have ground water declines of 15 to 25 feet in the area with a significant decrease in well production. In most areas of the northern part of the Prairie Bend Unit, the top water Pleistocene formation has been depleted. Some of these shallow wells in the northern reaches of the area that were yielding 700 to 800 gallons per minute 10 years ago and now yield less than 150 gallons per minute. These shallow wells have been replaced with deep wells drilled into the Ogallala aquifer. The problem is that in some areas the Ogallala formation either does not exist or is not that productive and is yielding only 400 gallons per minute.

The land we farm that lies close to the Platte River (within two to four miles) also has no deep water Ogallala aquifer. The wells on this land have decreased up to 25 percent in output over the last 15 to 20 years.

This trend is alarming to me, and when we take into account the projections of ground water models and studies, such as the Platte River Basin Level B Study conducted by the Missouri River Basin Commission, our future for sustained irrigated agriculture is in serious jeopardy.

In addition, there are water quality problems. All of the rural residents and towns in the area get their drinking water from ground water. Several communities have problems because their nitrate content is above the Public Health Service's recommended maximum. I had to replace my well a few years ago because it was yielding water with this same problem.

Flooding is another problem and, although not frequent, can cause a great deal of damage. There was in excess of $30,000,000.00 damage in the 1967 flood between Kearney and Columbus, much of which was in the proposed project area.

I feel the mood of the people in our rural area and in the surrounding communities of Grand Island and Kearney, have changed to the point that they are ready to face up to these challenges. We envision a project that would not only supplement irrigated water supply, stabilize ground water levels and enhance ground water quality, but would enhance municipal and rural domestic water supplies and provide fish and wildlife habitat, instream flows, public outdoor recreation and flood control. One or more of these facets of the project would appeal to every citizen of our area in addition to stabilizing the economy of irrigated agriculture.

These are some of the reasons for the strong base of support the project has throughout the valley.

As you can see, we are not talking about a single purpose irrigation project, but a multi-purpose water resources project that would address all of these needs and more.

My neighbors and I support this type of project which will meet our needs for our future in irrigated agriculture. If we do not have some solutions to our challenges, we will be faced with turning irrigated acres back to dry land.

We in the Prairie Bend Unit urge you to support $200,000.00 for advanced planning of the project.

Respectfully yours,

Rodney K. Gangwish
Shelton, Nebraska 68876

[The statement of Doug Thompson follows:]

TESTIMONY

BY

DOUG THOMPSON

TO:

UNITED STATES HOUSE OF REPRESENTATIVES

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

HOUSE COMMITTEE ON APPROPRIATIONS

THE HONORABLE TOM BEVILL, CHAIRMAN

REQUEST:	$200,000.00 for Fiscal 1991
FUNDING PURPOSE:	Advanced Planning by U.S. Bureau of Reclamation
PROJECT:	Prairie Bend Unit Water Resources Project
LOCATION:	Dawson, Buffalo and Hall Counties in Nebraska
PROJECT PURPOSE:	Irrigation, stabilization of ground water levels, enhancement of water quality, small community and rural domestic water supplies, fish and wildlife habitat, flood control, public outdoor recreation and other purposes determined to be appropriate.

Mr. Chairman....Committee Members:

I submit this testimony to the committee in regard to the funds for the pre-construction planning of the Prairie Bend Project. Your past decisions to initiate and continue to fund the study are greatly appreciated by the communities in the area. It would be a tragedy if the project were halted now that the report has been completed.

Although the original project was conceived and promoted by irrigators in the area, Congress approved the initial study to encompass not only irrigation, but groundwater quality problems, domestic water supplies, flood control, outdoor recreation, and fish and wildlife habitat.

Since the project will withdraw a small portion of the flows from the Platte River in the "critical habitat" area of the endangered whooping crane (and several other "threatened species"), a very disproportionate amount of the funds appropriated have been used by the Bureau of Reclamation for a thorough and complete study of optimum wildlife flows and roosting area. Consequently, the Bureau's plan includes several large tracts on the Platte to be set aside and managed strictly for habitat of the endangered whooping crane.

We, the project proponents, feel this is appropriate and commend the Bureau for its efforts to make this project a totally new concept in that it would not only solve the water shortage problems of the area, but would also enhance the habitat of an endangered species.

Another new concept of the project is that it will supply irrigation water strictly through recharge of the aquifer, rather than conventional surface delivery. This plan is totally compatible since the area to be serviced is essentially all Class I, prime farmland, already irrigated by groundwater pumps.

As a third generation farmer in western Hall County, I have witnessed (and been party to) the irrigation boom, which has turned dryland, subsistent type economy into one of the most productive agricultural areas of the world. During this era, the farmers and businesses of the community have flourished because of two precious resources - our vast underground water and prime farmland. Unfortunately, I have also witnessed the decline of rural communities resulting from the current farm economic situation. The final and devastating blow will come if we lose our water supply. We farm in a semi-arid area; our prime land is of little value without water to make it flourish.

My pumping costs have already nearly tripled in the last twenty years, not withstanding pump replacement costs of $15,000 - $17,000 each. These pumping and replacement costs are again compounded in that the yield of the wells has steadily declined by 50 to 60 percent.

The future of my family and neighbors will hinge upon your decision. Please give it your utmost consideration.

Sincerely,

Doug Thompson

Doug Thompson
Rt. 3
Wood River, NE 68883

[The statement of Ron Hargens follows:]

TESTIMONY

BY

RON HARGENS

CAIRO, NEBRASKA

TO:

UNITED STATES HOUSE OF REPRESENTATIVES

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

HOUSE COMMITTEE ON APPROPRIATIONS

THE HONORABLE TOM BEVILL, CHAIRMAN

REQUEST:	$200,000.00 for Fiscal 1991
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Mr. Chairman....Committee Members:

I farm between Cairo and Wood River in the approximate center of the Prairie Bend area. I am 42 years old and have always lived in this area and have farmed for 24 years for myself.

In that time period I have seen the shallow wells go dry, being replaced by deep wells, tripling the horsepower requirements for irrigation water. On the land I farm there have been six irrigation wells abandoned for lack of production. Replacement wells were drilled at a greater depth to sustain irrigation.

According to the Bureau of Reclamation studies, and other studies done by private engineering firms, it is shown that in parts of the Prairie Bend area the aquifer life to sustain irrigation is 25 years or less.

In the same period the nitrate levels of some of our wells have increased to up to 50 parts per million. This is five times the level for quality standard safe drinking water.

To solve some of our problems, the Central Nebraska Conservation Association (Prairie Bend) was formed by a group of farmers and landowners from the Cairo, Wood River and Shelton area in western Hall and eastern Buffalo Counties in Nebraska. The purpose of the organization is to develop an irrigation and ground water recharge project to combat declining water tables and well production in much of the area.

To do this we filed a water right application in March of 1976 with the State of Nebraska to divert, store and use Platte River water. In October, 1976 we went to the Central Platte Natural Resources District, a local government subdivision, to ask them to assist us in securing a feasibility study. The Board of Directors unanimously decided to help us because of the existing and future water problems. Together we began seeking assistance from the Bureau of Reclamation to have them do a feasibility study of the area.

Our Nebraska delegation secured authorization and funding approval in both the House and the Senate for the feasibility study in 1983 and the study is now completed. The Central Platte Natural Resources District has provided $240,000.00 to help fund the feasibility study and additional financial support was offered from the Central Nebraska Conservation Association.

The Bureau of Reclamation feasibility study shows that there is a very valuable and feasible project to be developed in the area. The project would be mainly to protect stream flows in the Platte River for the endangered Whooping Crane, Bald Eagle, Least Terns and Piping Plover. It would also provide ground water recharge for the farm economy and reduce nitrate levels of our drinking water.

The project is being supported by several area groups and organizations: the Hall County Board of Supervisors, Buffalo County

Board of Supervisors, Kearney Chamber of Commerce, Grand Island Chamber of Commerce, City of Grand Island, the towns of Cairo, Shelton and Wood River, Central Platte Natural Resources District, Central Nebraska Conservati[illegible]ssociation, and the Whooping Crane Habitat Maintenance Trust. The Central Platte NRD also conducted a public opinion poll by mail and of those who had an opinion, 85 percent were in favor.

With this amount of State and local support, and the existing and future water problems of water quality and supply, I feel it is of utmost importance that the advanced planning be started. The project needs $200,000.00 in fiscal 1991 to continue the progress of resolving our groundwater and wildlife problems.

Therefore, I am submitting this testimony to request your support of funding in order to continue the study for the Prairie Bend Project by the Bureau of Reclamation.

Sincerely,

Ron Hargens

Ron Hargens
Cairo, Nebraska 68824

[The statement of Marvin J. Rickert follows:]

TESTIMONY

BY

MARVIN J. RICKERT

WOOD RIVER, NEBRASKA

TO:

UNITED STATES HOUSE OF REPRESENTATIVES

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

HOUSE COMMITTEE ON APPROPRIATIONS

THE HONORABLE TOM BEVILL, CHAIRMAN

REQUEST:	$200,000.00 for Fiscal 1991
FUNDING PURPOSE:	Advanced Planning by U.S. Bureau of Reclamation
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The Honorable Tom Bevill, Chairman
Subcommittee on Energy and Water Development
House Committee on Appropriations
Washington, D.C. 20515

Mr. Chairman....Committee Members:

I, Marvin Rickert, being a farmer who has lived in the Prairie Bend water project area my whole life and having farmed for 30 years in this area, realize the water declines and the need for a water project.

I am asking for your support for advanced planning funds for the Prairie Bend Water Project.

I want to thank you for your support in the past and for your future support in solving our water problems.

Respectfully yours,

Marv J Rickert

Marvin J. Rickert
P.O. Box 386
Wood River, Nebraska 68883

Mrs. SMITH. Does anyone else have any comments?

Mr. GANGWISH. I would just like to make a comment to thank you, Mr. Chairman, and Mrs. Smith, for the help that we have had over the years for this project.

I can remember, I think it was about 48 years ago, the first meeting I went to on the need for this project with my father. But hopefully in the not too distant future, we can accomplish that project.

But again, I want to thank this committee and especially Mrs. Smith for her support, and if we cannot convince her to run for another term, I have taken it upon myself to recommend that maybe we could convince her to be the Lee Iacocca of agriculture for Nebraska and the United States. She's a great spokesman.

Mr. BEVILL. You couldn't have a better one.

Mrs. SMITH. I have one or two just very brief questions.

Do I understand you are telling us that all of you, as local sponsors, are prepared to sharply scale back your project from roughly 450 million to 150 million dollars?

Mr. GANGWISH. That is correct.

Mrs. SMITH. What would be the Bureau's benefit cost ratio?

Mr. BISHOP. The Bureau calculated cost benefit ratio utilizing both the standard Federal rate and also for our, in the state's information, calculated it using the state's rate, in both cases, it's a very feasible project, one that we have identified having a BC ratio of one-and-a-quarter to 1.123, to be exact, to one, using the eight-and-seven-eights percent, and using the state's rate, to take out the inflation factor and use that as a basis for cost sharing in Nebraska.

It has a BC ratio of 3.8 to one, nearly $4 return to every dollar spent. And that is before we have taken account of the benefits from flood control and the large benefits from water quality, which are hard to identify all of those benefits because they deal with health of the people.

Mrs. SMITH. Mr. Chairman, you know, this subcommittee has voted to invest $3.8 million in study of this project over these years, and I am so pleased if we can come up with the money to complete the project.

And it will have, as you outline, both irrigation and environmental benefits of significant nature.

Thank you very, very much. Thank you all so much for being here.

And Mr. Chairman, thank you, again and again.

Mr. BEVILL. Well, thank you, Mrs. Smith, and we appreciate every one of you. You are a great group to work with, and we will be looking forward to seeing you again next year.

We will work with Virginia, as usual, in this 1991 appropriations bill that we are talking about now and do what we can, of course, as always.

Mr. GANGWISH. Thank you.

WEDNESDAY, APRIL 4, 1990.

MNI WICONI PROJECT, SOUTH DAKOTA

WITNESSES

CECELIA FIRE THUNDER, OGLALA LAKOTA WOMENS SOCIETY
JO ANN TALL, NATIVE RESOURCES COALITION

Mr. BEVILL. Ms. Cecelia Fire Thunder is recognized at this time.

Your prepared statement will be made a part of the record, and you may just proceed as you wish.

You are Jo Ann Tall?

Ms. TALL. Yes.

Ms. FIRE THUNDER. Thank you, Mr. Chairman and honorable committee.

My name is Cecelia Fire Thunder. I am an enrolled member of the Oglala Sioux Tribe and a resident of Pine Ridge Reservation of South Dakota.

Today I am representing the Oglala Lakota Women's Society and the Native Resource Coalition. I am here to inform the committee and the Congress of the United States that a majority of the Oglala Sioux do not want the Mni Wiconi Water Project that was authorized under Public Law 100-516 on October 24, 1988.

Our position is based on the 1868 Fort Laramie Treaty and on a popular referendum on the Mni Wiconi Project that was held on November 14, 1989.

The 1868 Fort Laramie Treaty is a guarantee of tribal sovereignty and assured the Oglala Lakota's perpetual control of the area from the east bank of the Missouri River west to the Powder River and into the Wyoming Big Horn mountains.

These are the terms of the Lakota's relationship to the United States, terms which remain in force by virtue of a standing treaty between the United States and the Great Sioux Nation.

The Mni Wiconi Bill refuses to recognize the existence of our Indian Reserve Water Rights and our Treaty Water Rights.

The Oglala Sioux Tribal members have exercised their constitutional voting rights and have rejected the Mni Wiconi Water Project in a referendum on November 14, 1989 by a vote of 1,017 against and 873 in favor of the project. The message is clear. The majority of Oglalas do not want the Mni Wiconi Water Project.

After the referendum there were suggestions that our referendum was non-binding. Nothing could be further from the truth. The referendum vote was held in accordance with Article IX of the Oglala Sioux Tribal Constitution which says that "the vote of a majority of the qualified voters voting in such a referendum shall be conclusive and binding on the tribal council."

Before the referendum Senator Tom Daschle (D, S.D.) and the Bureau of Indian Affairs (BIA) interfered with the tribal political process. The BIA spent $135,600 to influence the referendum vote and is still working on the project in spite of the referendum outcome.

The Oglala people do not appreciate state of Federal interference with our democratic process. Our people have voted the Mni

Wiconi Project down and yet the government is still trying to force it on us.

The Mni Wiconi Water Project is not in the best interests of the Oglala people. The primary beneficiaries of the project would be non-Indians who want to use the Oglalas so that they can get water.

Before the referendum, Senator Daschle and other experts came to our reservation and made outrageous claims for the project. Among other things, Daschle claimed our water causes diabetes and made promises that a friend of his who is listed on the Fortune 500 list of companies told him that he would bring a company to the Pine Ridge Reservation if we had good drinking water.

The Oglalas saw through such claims and rejected the project. In a television interview following the referendum, Daschle insulted us with his interpretation of the outcome. It's hard to work with uneducated people, he said.

Our elders say that Missouri River water is Mni so se, dirty water, and is not water for people to drink. Senator Daschle and others promoted Mni Wiconi as a Health Project but over 1,000 South Dakota ranchers paid $300 each for South Dakota's matching fund share and 500 stock dams were designated in anticipation of Mni Wiconi.

The project is not a health project for Pine Ridge Reservation but a stock grower's project for off reservation interests. The engineering report cited in the bill clearly shows that two-thirds of the water would go to off reservation parties, even though their contribution is only $12.5 million of the $100 million authorization, and even though there are only 8,000 of them and 20,000 Oglalas.

We have good water beneath our reservation. The comprehensive 1986 study by the Rural Coalition showed that there is plenty of good water in shallow aquifers underlying the Pine Ridge Reservation.

That water could be developed for much less than the cost of the Mni Wiconi Pipeline. Many Oglalas do not want a pipeline coming across their land. The pipeline would cause conflicts between tribal government and individual landowners over rights of way.

Public Law 100-516 was poorly constructed, and Congress was ill-advised in appropriating money for the Mni Wiconi Water Project. Our tribal leaders did not inform the people about Mni Wiconi until after Congress had already passed the bill.

Then we rejected Mni Wiconi through a popular referendum. We ask you to consider and respect the mandate of the Oglala people. We ask you not to fund this project.

In this time of democratic changes that are sweeping the world the United States government must recognize democratic processes at home as well as abroad.

Thank you, Mr. Chairman, and honorable committee Members.

[The statement of Cecelia Fire Thunder follows:]

WRITTEN TESTIMONY

Submitted to the
House of Representatives
Energy and Water Development
Subcommittee on Appropriations
Room 2362, Rayburn Building
Wash., D.C., 20515

by:
Cecelia Fire Thunder
Oglala Sioux Tribal Member
April 4, 1990

Thank you Mr. Chairman and Honorable Committee Members. My name is Cecelia Fire Thunder. I am an enrolled member of the Oglala Sioux Tribe and a resident of Pine Ridge Reservation of South Dakota. Today I am representing the Oglala Lakota Women's Society and the Native Resource Coalition. I am here to inform the Committee and the Congress of the United States that a majority of the Oglala Sioux do not want the Mni Wiconi Water Project that was authorized under Public Law 100-516 on October 24, 1988. Our position is based on the 1868 Fort Laramie Treaty and on a popular referendum on the Mni Wiconi Project that was held on November 14, 1989.

The 1868 Fort Laramie Treaty is a guarantee of tribal sovereignty and assured the Oglala Lakota's perpetual control of the area from the east bank of the Missouri River west to the Powder River and into the Wyoming Big Horn mountains. These are the terms of the Lakota's relationship to the United States, terms which remain in force by virtue of a standing treaty between the United States and the Great Sioux Nation. The Mni Wiconi Bill refuses to recognize the existence of our Indian Reserve Water Rights and our Treaty water rights (Sec. 11, para. (5), P.L. 100-516, Oct. 24, 1988).

The Oglala Sioux Tribal members have exercised their constitutional voting rights and have rejected the Mni Wiconi Water Project in a referendum on November 14, 1989 by a vote of 1,017 against and 873 in favor of the project. The message is clear. The majority of Oglalas do not want the Mni Wiconi Water Project.

After the referendum there were suggestions that our referendum was non-binding. Nothing could be further from the truth. The referendum vote was held in accordance with Article IX of the Oglala

Sioux Tribal Constitution which says that "the vote of a majority of the qualified voters voting in such a referendum shall be conclusive and binding on the tribal council" (copy of Constitution attached).

Before the referendum Senator Tom Daschle (D, S.D.) and the Bureau of Indian Affairs (BIA) interfered with the tribal political process. The BIA spent $135,600 to influence the referendum vote and is still working on the project in spite of the referendum outcome. The Oglala people do not appreciate state or federal interference with our democratic process. Our people have voted the Mni Wiconi Project down and yet the government is still trying to force it on us.

The Mni Wiconi Water Project is not in the best interests of the Oglala people. The primary beneficiaries of the project would be non-Indians who want to use the Oglalas so that they can get water. Before the referendum Senator Daschle and other experts came to our reservation and made outrageous claims for the project. Among other things Daschle claimed our water causes diabetes and made promises that a friend of his who is listed on the Fortune 500 list of companies told him that he would bring a company to the Pine Ridge Reservation if we had good drinking water. The Oglalas saw through such claims and rejected the project. In a television interview following the referendum Daschle insulted us with his interpretation of the outcome; it's hard to work with uneducated people he said.

Our elders say that Missouri River water is Mni šo še, dirty water, and is not water for people to drink. Senator Daschle and others promoted Mni Wiconi as a Health Project but over 1,000 South Dakota ranchers paid $300 each for South Dakota's matching fund share and 500 stock dams were designated in anticipation of Mni Wiconi. The Project is not a health project for Pine Ridge Reservation but a stock grower's project for off reservation interests. The engineering report cited in the Bill clearly shows that 2/3 of the water would go to off reservation parties even though their contribution is only 12.5 million dollars of the 100 million dollar authorization, and even though there are only 8,000 of them and 20,000 Oglalas.

We have good water beneath our reservation. The comprehensive 1986 study by the Rural Coalition showed that there is plenty of good water in shallow aquifers underlying the Pine Ridge Reservation. That water could be developed for much less than the cost of the Mni Wiconi Pipeline. Many Oglalas do not want a pipeline coming across their land. The pipeline would cause conflicts between tribal government and individual landowners over rights of way.

Public Law 100-516 was poorly constructed and Congress was ill-advised in appropriating money for the Mni Wiconi Water Project. Our tribal leaders did not inform the people about Mni Wiconi until after Congress had already passed the bill. Then we rejected Mni Wiconi through a popular referendum. We ask you to consider and respect the mandate of the Oglala people. We ask you not to fund this project. In this time of democratic changes that are sweeping the world the United States government must recognize democratic processes at home as well as abroad. Thank you Mr. Chairman and Honorable Committee Members.

Respectfully Submitted,

Cecelia Fire Thunder
Oglala Sioux

Testimony of Cecelia Fire Thunder - Oglala Sioux Tribe, S.D.

List of Attachments

#1 Certified results of Mni Wiconi Water Project referendum.

#2 Oglala Sioux Tribal Council Minutes of November 7, 1989

#3 "Background to Mni Wiconi Referendum" (2 pages)

#4 "Open Letter on Mni Wiconi Referendum"

#5 Rapid City Journal articles on referendum vote (2 pages)

#6 Lakota Times advertisement and factsheets about Mni Wiconi (4 pages)

#7 Excerpt from 1986 Rural Coalition Study regarding quality of groundwater on Pine Ridge Reservation

ATTACHMENT #1

SPECIAL REFERENDUM

OFFICIAL CERTIFIED RESULTS
NOVEMBER 16, 1989
Donna M. Garnette

	PINE RIDGE VILLAGE	RED CLOUD COMMUNITY	SLIM BUTTES	WOLF CREEK COMMUNITY	BATESLAND	WAKPAMNI LAKE	NO. 4 COMMUNITY	CALICO COMMUNITY	OUR LADY - SIOUX - OGLALA	NO. 6 COMMUNITY	RED SHIRT TABLE	WANBLEE - EAGLE NEST	ALLEN - PASS CREEK	MARTIN - LA CREEK	KYLE - MEDICINE ROOT	POTATOE CREEK - MEDICINE ROOT	NO. 16 - PORCUPINE	SHARPS - PORCUPINE	NO. 7 - WOUNDED KNEE	NO. 12 ROCKYFORD	NO. 10 MANDERSON	CHALLENGE VOTES	ABSENTEE	TOTAL
YES	257	13	8	19	11	7	7	14	105	13	11	42	29	25	60	11	48	15	19	9	52	95	3	873
NO	88	16	7	15	36	17	12	40	115	9	8	66	74	46	123	14	126	22	37	0	58	87	1	1,017
CHALLENGE VOTES																								
-YES -	41	0	2	5	0	0	7	2	14	0	4	3	0	3	4	1	2	0	0	3	4	95		
-NO-	16	0	0	4	2	1	2	2	9	0	1	2	1	7	17	3	12	2	3	0	3	87		

ATTACHMENT #2

OST COUNCIL MINUTES
November 7, 1989
Page Fifteen

this one issue that brings up the question, are we a government who can make decisions, or are we a government at someone elses mercy. She stated this subject goes beyond educating the people.

Discussion continued. . . .

> MOTION MADE BY DAVID JANIS, SECONDED BY DUANE BREWER TO RESCIND THE PREVIOUS TRIBAL COUNCIL MOTION MADE ON SEPTEMBER 6, 1989, TO SCHEDULE A REFERENDUM VOTE ON THE OGLALA SIOUX RURAL WATER SUPPLY SYSTEM (MNI WICONI).

Discussion continued. . . .

David Janis stated he believed the tribal government should make the decision on the referendum vote.

Wilbur Between Lodges stated the tribal council should go with the decision they made because the people should be given the chance to voice their opinion.

> MOTION MADE BY GERALD BIG CROW, SECONDED BY WILBUR BETWEEN LODGES TO TABLE DAVID JANIS' MOTION AND TO CONTINUE ON WITH THE REFERENDUM VOTE ON THE OGLALA SIOUX RURAL WATER SUPPLY SYSTEM (MNI WICONI), NOVEMBER 14, 1989.

ROLL CALL VOTE:

Melvin Cummings - No
David Janis - No
Paul Little - No
Richard Little Hawk - Yes
Marvin Ghost Bear - No
Terry Weston - Yes
David Pourier - Yes
Duane Brewer - No
Gerald Big Crow - Yes
Pete Richards - Yes
Phillip Under Baggage - Yes
Warren Pourier - Yes
Charles Bettelyoun - Yes
Wilbur Between Lodges - Yes

MOTION CARRIED 9 YES; 5 NO; 0 ABSTAIN.

Phillip Under Baggage asked the tribal council if they would consider letting President Iron Cloud negotiating with the Congressional Delegation on state jurisdiction, the Black Hills Claim, the McCarran Amendment, and state taxes and use that to sell to the people.

President Iron Cloud stated he was willing to do that, but to deal with Congress, where there are already laws, there would have to be committee discussion before there would actually be a decision.

ATTACHMENT #3

Background to Mni Wiconi Referendum

1,017 voted NO and 873 voted YES on the Mni Wiconi Referendum on November 14. The voters rejected the Mni Wiconi Project.

The vote on Mni Wiconi by District:

District	No	Yes
Pine Ridge Village	104	298
Wakpamni District	154	95
White Clay District	142	147
Eagle Nest District	68	45
Pass Creek District	75	29
La Creek District	53	28
Medicine Root District	157	76
Porcupine District	162	65
Wounded Knee District	101	87
Absentee Ballots	1	3
Total Vote	1,017	873

BEFORE THE REFERENDUM ON MNI WICONI

In September 1988 the O.S.T. passed Resolution 88-157 supporting Mni Wiconi and calling for a referendum vote:

"THEREFORE BE IT RESOLVED, that the Oglala Sioux Tribal Council hereby supports H.R. 2772, (Mni Wiconi Bill) only on the condition that the amendments contained in Exhibit "A" of this resolution are included in the final version of the bill passed by Congress. . ."

Amendment 13 of Exhibit A of O.S.T. Resolution 88-157 on Mni Wiconi says:

"SEC. 13. This Act shall not go into effect until it is approved by a majority of the qualified voters of the Oglala Sioux Tribe in a referendum election conducted by the Secretary of the Interior within six (6) months after the passage of the Act and proclaimed by the President of the United States."

On September 6th, 1989 the Oglala Sioux Tribal Council voted to hold the referendum:

"Motion made by Richard Little Hawk, seconded by Phillip Under Baggage to schedule a referendum vote to be conducted on November 15, 1989, on the Oglala Sioux Rural Water Supply System (Mni Wiconi).

ROLL CALL VOTE:

Melvin Cummings	No	Frank Means	No
David Janis	No	Gerald Big Crow	Yes
Steve Hawk	Yes	Pete Richards	Yes
Paul Little	No	Phillip Under Baggage	Yes
Richard Little Hawk	Yes	Warren Pourier	Yes
Marvin Ghost Bear	Yes	Charles Bettelyoun	Yes
David Pourier	Yes	Wilbur Between Lodge	Yes

Motion Carried With 10 Yes; 4 No; 0 Abstain."
(Summary of the Oglala Sioux Tribal Council Meetings Sept 6 & 7, 1989, page 2).

Before the the referendum election Senator Tom Daschle said " **If the reservation says no to this water project then it's going to stop there.**" (Lakota Times, Tuesday, September 5, 1989 page 2)

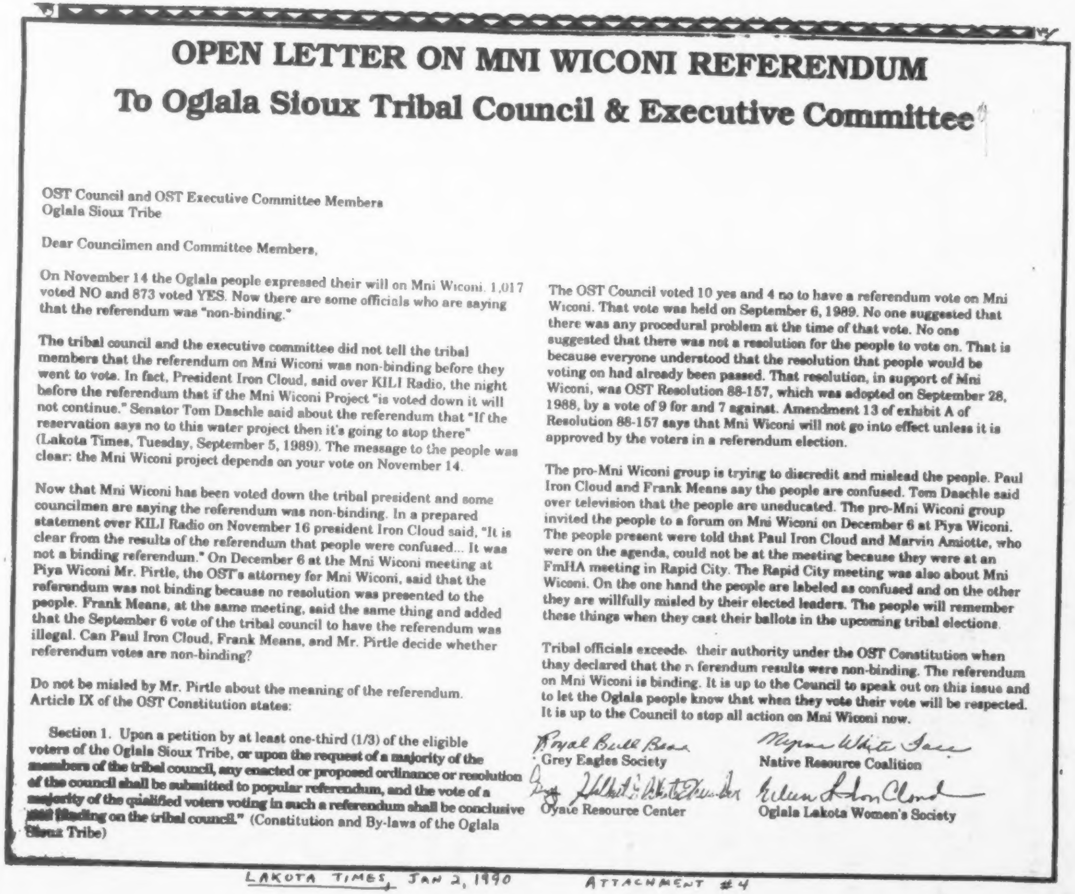
The night before the referendum President Paul Iron Cloud said over KILI Radio that **if the Mni Wiconi Project "is voted down it will not continue.**" (KILI Radio Broadcast on November 13, 1989)

AFTER THE REFERENDUM ON MNI WICONI

After the referendum election President Paul Iron Cloud said "It is clear from the results of the referendum that people were confused... **It was not a binding referendum**" (Kili Radio interview November 16, 1989.)

After the referendum election Senator Tom Daschle said "**I think it's important for tribal officials to clarify this issue for the reservation. I hold them accountable for that.**" (Rapid City Journal, November 16, 1989, page B1)

Prepared by American Friends Service Committee, Oyate Resource Center; Native Resource Coalition; Oglala Lakota Women's Society; and other concerned tribal members.



OPEN LETTER ON MNI WICONI REFERENDUM

To Oglala Sioux Tribal Council & Executive Committee

OST Council and OST Executive Committee Members
Oglala Sioux Tribe

Dear Councilmen and Committee Members,

On November 14 the Oglala people expressed their will on Mni Wiconi. 1,017 voted NO and 873 voted YES. Now there are some officials who are saying that the referendum was "non-binding."

The tribal council and the executive committee did not tell the tribal members that the referendum on Mni Wiconi was non-binding before they went to vote. In fact, President Iron Cloud, said over KILI Radio, the night before the referendum that if the Mni Wiconi Project "is voted down it will not continue." Senator Tom Daschle said about the referendum that "If the reservation says no to this water project then it's going to stop there" (Lakota Times, Tuesday, September 5, 1989). The message to the people was clear: the Mni Wiconi project depends on your vote on November 14.

Now that Mni Wiconi has been voted down the tribal president and some councilmen are saying the referendum was non-binding. In a prepared statement over KILI Radio on November 16 president Iron Cloud said, "It is clear from the results of the referendum that people were confused... It was not a binding referendum." On December 6 at the Mni Wiconi meeting at Piya Wiconi Mr. Pirtle, the OST's attorney for Mni Wiconi, said that the referendum was not binding because no resolution was presented to the people. Frank Means, at the same meeting, said the same thing and added that the September 6 vote of the tribal council to have the referendum was illegal. Can Paul Iron Cloud, Frank Means, and Mr. Pirtle decide whether referendum votes are non-binding?

Do not be misled by Mr. Pirtle about the meaning of the referendum. Article IX of the OST Constitution states:

> Section 1. Upon a petition by at least one-third (1/3) of the eligible voters of the Oglala Sioux Tribe, or upon the request of a majority of the members of the tribal council, any enacted or proposed ordinance or resolution of the council shall be submitted to popular referendum, and the vote of a majority of the qialified voters voting in such a referendum shall be conclusive and binding on the tribal council." (Constitution and By-laws of the Oglala Sioux Tribe)

The OST Council voted 10 yes and 4 no to have a referendum vote on Mni Wiconi. That vote was held on September 6, 1989. No one suggested that there was any procedural problem at the time of that vote. No one suggested that there was not a resolution for the people to vote on. That is because everyone understood that the resolution that people would be voting on had already been passed. That resolution, in support of Mni Wiconi, was OST Resolution 88-157, which was adopted on September 28, 1988, by a vote of 9 for and 7 against. Amendment 13 of exhibit A of Resolution 88-157 says that Mni Wiconi will not go into effect unless it is approved by the voters in a referendum election.

The pro-Mni Wiconi group is trying to discredit and mislead the people. Paul Iron Cloud and Frank Means say the people are confused. Tom Daschle said over television that the people are uneducated. The pro-Mni Wiconi group invited the people to a forum on Mni Wiconi on December 6 at Piya Wiconi. The people present were told that Paul Iron Cloud and Marvin Amiotte, who were on the agenda, could not be at the meeting because they were at an FmHA meeting in Rapid City. The Rapid City meeting was also about Mni Wiconi. On the one hand the people are labeled as confused and on the other they are willfully misled by their elected leaders. The people will remember these things when they cast their ballots in the upcoming tribal elections.

Tribal officials exceeded their authority under the OST Constitution when thay declared that the referendum results were non-binding. The referendum on Mni Wiconi is binding. It is up to the Council to speak out on this issue and to let the Oglala people know that when they vote their vote will be respected. It is up to the Council to stop all action on Mni Wiconi now.

Royal Bull Bear
Grey Eagles Society

Native Resource Coalition

Oyate Resource Center

Eileen Iron Cloud
Oglala Lakota Women's Society

LAKOTA TIMES, JAN 2, 1990 ATTACHMENT #4

ATTACHMENT #5

Unofficial tally indicates most oppose Mni Wiconi

Hugh O'Gara
Staff Writer

PINE RIDGE — It will be today before the final results of a referendum election on a $100 million water project will be known.

The unofficial results of Tuesday's election had 929 voters opposed to the Mni Wiconi water project and 775 voters supporting it. All 21 voting precincts on the Pine Ridge Reservation had reported by Wednesday.

However, 231 votes were challenged in the election, which could decide the outcome. Tribal officials said the votes were challenged on the grounds the voters were not enrolled members of the Oglala Sioux Tribe.

Only enrolled tribal members were allowed to vote in the non-binding election to measure the support for the Mni Wiconi water project. Only votes by enrolled tribal members will be included in the final tally, election officials said.

It will be today before they know if the challenged votes are legitimate, officials said.

If the result stands, it could have an effect on future federal funds for the project, officials said.

"I'm disappointed to say the least," said Sen. Tom Daschle, D-S.D. "I think it's important for tribal officials to clarify this issue for the reservation. I hold them accountable for that."

The referendum election was called to judge support for the 2,300-mile pipeline to carry drinking water from the Missouri River at Fort Pierre to the reservation and 25 communities in eight south-central South Dakota counties.

It would serve 12,000 reservation residents and 8,000 people living off the reservation.

The Mni Wiconi Act was signed into law in 1988 by President Reagan. There has been $500,000 appropriated for project planning but no money has been allocated for construction.

Rep. Tim Johnson, D-S.D., said Tuesday's vote hurt the reservation's chances of getting drinking water.

"Those who voted against Mni Wiconi, in effect, have voted to give away water rights to white communities down river," Johnson said. "This may have been the last chance for the Indian community on Pine Ridge to have access to their own water."

Despite the vote, Johnson said he planned to pursue the project.

"I haven't thrown in the towel, yet," he said. "I'm going to be as aggressive as I possibly can be. I would like to see water brought to the Pine Ridge."

R.C. Journal Nov 16, 1989, p. B1

RAPID CITY JOURNAL NOV. 16, 1989

BEST AVAILABLE COPY

11/15/89
R.C. Journal

Early returns show Mni Wiconi trailing

Hugh O'Gara
Staff Writer

PINE RIDGE – Unofficial results from the Pine Ridge Reservation referendum election on the fate of the $100 million Mni Wiconi water project showed it trailing late Tuesday evening.

Opponents of the water project were leading by 938 votes to 765 votes for the project that would bring Missouri River water to the Pine Ridge Reservation and other West River communities.

By late Tuesday, 19 of 21 precincts had reported, election officials said.

Also, 220 of the 1,603 ballots that had been counted were challenged on ground of enrollment in the Oglala Sioux Tribe.

Only enrolled tribal members were eligible to vote in the referendum and election officials said the fate of the challenged votes would not be known until today when they can be checked by the tribal enrollment office.

If any of the challenged votes are valid, they will be counted, election officials said, and if they were cast by voters not enrolled in the tribe, they will be tossed out.

The referendum election on the 2,300-mile pipeline from the Missouri River west was called after reservation residents said there were unanswered questions about the project.

The proposed Mni Wiconi pipeline would carry water to 25 communities in eight western South Dakota counties and the reservation.

Currently, the towns get drinking water from deep or shallow wells while many people on the reservation must haul water to their homes.

About 12,000 reservation residents and 8,000 people living off the reservation would be served by the project.

The Mni Wiconi Act was signed into law by President Reagan in 1988. Congress approved the pipeline from Fort Pierre to the reservation but did not fund its construction. A total of $500,000 in planning money was approved for the project for fiscal 1990.

Officials with Sen. Tom Daschle's office said Tuesday's vote could have an effect on future funds for the Mni Wiconi project. There are other water projects in the nation that could use $100 million in funds, one Daschle aide noted.

However, reservation residents have questioned whether the entire Mni Wiconi story has been told.

Earlier, Eileen H. Iron Cloud, a member of the reservation environmental organization, the Native Resource Coalition, said the group had concerns about the project.

The project was being built for the benefit of non-Indians and could jeopardize Indian water and treaty rights, Iron Cloud said.

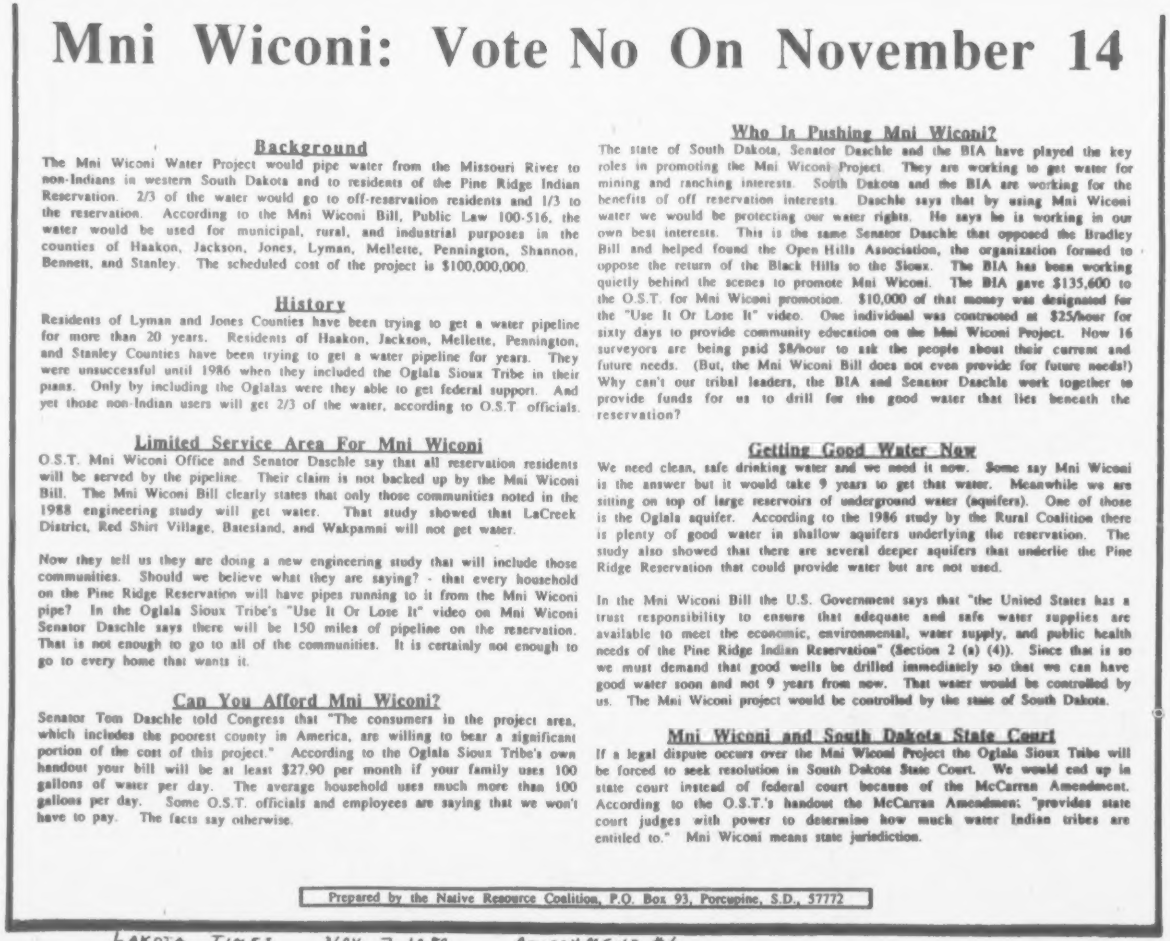
Joel Benson, legislative aide for Rep. Tim Johnson, who supported the project, said Tuesday night Johnson would be disappointed if reservation voters defeated the project, but said they would "push forward" with it.

Congressional leaders may try and continue the project for communities outside the Pine Ridge Reservation but any decisions would wait until the last votes are counted, Benson said.

Rich Gordon, an aide to Daschle, another Mni Wiconi supporter, said Daschle was disappointed in the early returns, "but we still hope the final results will be in favor of the project."

Gordon said, "Obviously there is still a lot of misunderstanding on the project on the reservation and the votes reflect that."

RAPID CITY JOURNAL
NOV 15, 1989



Mni Wiconi: Vote No On November 14

Background

The Mni Wiconi Water Project would pipe water from the Missouri River to non-Indians in western South Dakota and to residents of the Pine Ridge Indian Reservation. 2/3 of the water would go to off-reservation residents and 1/3 to the reservation. According to the Mni Wiconi Bill, Public Law 100-516, the water would be used for municipal, rural, and industrial purposes in the counties of Haakon, Jackson, Jones, Lyman, Mellette, Pennington, Shannon, Bennett, and Stanley. The scheduled cost of the project is $100,000,000.

History

Residents of Lyman and Jones Counties have been trying to get a water pipeline for more than 20 years. Residents of Haakon, Jackson, Mellette, Pennington, and Stanley Counties have been trying to get a water pipeline for years. They were unsuccessful until 1986 when they included the Oglala Sioux Tribe in their plans. Only by including the Oglalas were they able to get federal support. And yet those non-Indian users will get 2/3 of the water, according to O.S.T. officials.

Limited Service Area For Mni Wiconi

O.S.T. Mni Wiconi Office and Senator Daschle say that all reservation residents will be served by the pipeline. Their claim is not backed up by the Mni Wiconi Bill. The Mni Wiconi Bill clearly states that only those communities noted in the 1988 engineering study will get water. That study showed that LaCreek District, Red Shirt Village, Batesland, and Wakpamni will not get water.

Now they tell us they are doing a new engineering study that will include those communities. Should we believe what they are saying? - that every household on the Pine Ridge Reservation will have pipes running to it from the Mni Wiconi pipe? In the Oglala Sioux Tribe's "Use It Or Lose It" video on Mni Wiconi Senator Daschle says there will be 150 miles of pipeline on the reservation. That is not enough to go to all of the communities. It is certainly not enough to go to every home that wants it.

Can You Afford Mni Wiconi?

Senator Tom Daschle told Congress that "The consumers in the project area, which includes the poorest county in America, are willing to bear a significant portion of the cost of this project." According to the Oglala Sioux Tribe's own handout your bill will be at least $27.90 per month if your family uses 100 gallons of water per day. The average household uses much more than 100 gallons per day. Some O.S.T. officials and employees are saying that we won't have to pay. The facts say otherwise.

Who Is Pushing Mni Wiconi?

The state of South Dakota, Senator Daschle and the BIA have played the key roles in promoting the Mni Wiconi Project. They are working to get water for mining and ranching interests. South Dakota and the BIA are working for the benefits of off reservation interests. Daschle says that by using Mni Wiconi water we would be protecting our water rights. He says he is working in our own best interests. This is the same Senator Daschle that opposed the Bradley Bill and helped found the Open Hills Association, the organization formed to oppose the return of the Black Hills to the Sioux. The BIA has been working quietly behind the scenes to promote Mni Wiconi. The BIA gave $135,600 to the O.S.T. for Mni Wiconi promotion. $10,000 of that money was designated for the "Use It Or Lose It" video. One individual was contracted at $25/hour for sixty days to provide community education on the Mni Wiconi Project. Now 16 surveyors are being paid $8/hour to ask the people about their current and future needs. (But, the Mni Wiconi Bill does not even provide for future needs!) Why can't our tribal leaders, the BIA and Senator Daschle work together to provide funds for us to drill for the good water that lies beneath the reservation?

Getting Good Water Now

We need clean, safe drinking water and we need it now. Some say Mni Wiconi is the answer but it would take 9 years to get that water. Meanwhile we are sitting on top of large reservoirs of underground water (aquifers). One of those is the Oglala aquifer. According to the 1986 study by the Rural Coalition there is plenty of good water in shallow aquifers underlying the reservation. The study also showed that there are several deeper aquifers that underlie the Pine Ridge Reservation that could provide water but are not used.

In the Mni Wiconi Bill the U.S. Government says that "the United States has a trust responsibility to ensure that adequate and safe water supplies are available to meet the economic, environmental, water supply, and public health needs of the Pine Ridge Indian Reservation" (Section 2 (a) (4)). Since that is so we must demand that good wells be drilled immediately so that we can have good water soon and not 9 years from now. That water would be controlled by us. The Mni Wiconi project would be controlled by the state of South Dakota.

Mni Wiconi and South Dakota State Court

If a legal dispute occurs over the Mni Wiconi Project the Oglala Sioux Tribe will be forced to seek resolution in South Dakota State Court. We would end up in state court instead of federal court because of the McCarran Amendment. According to the O.S.T.'s handout the McCarran Amendment: "provides state court judges with power to determine how much water Indian tribes are entitled to." Mni Wiconi means state jurisdiction.

Prepared by the Native Resource Coalition, P.O. Box 93, Porcupine, S.D., 57772

LAKOTA TIMES NOV. 7, 1989 ATTACHMENT #6

-*STOP*-
Mni Wiconi, Public Law 100-516

About Mni Wiconi

On November 14, 1989 Oglalas will decide in a reservation wide referendum whether they want Mni Wiconi or not. Mni Wiconi would pipe water from the Missouri River to Lyman and Jones Counties and to the Pine Ridge Reservation. The Oglala Sioux Mni Wiconi Rural Water Supply Project was authorized by Congress on October 24, 1988. The O.S.T. Council agreed to support Mni Wiconi under O.S.T. Resolution 88-157. The Natural Resources Department of the Oglala Sioux Tribe has sponsored several informational forums. Yet they have not answered significant major questions on the long-term social and economic effects of the proposed pipeline nor have they adequately addressed the impact of the the project on the water rights included in the 1868 Ft. Laramie Treaty. We present the following issues for your benefit in making your decision in the referendum election.

Mni Wiconi and the 1868 Ft. Laramie Treaty

- **Mni Wiconi undermines the 1868 Ft. Laramie Treaty.** Article 2 of the Treaty recognizes the east bank of the Missouri River as a legal boundary. The Treaty includes the Missouri River and it is the basis for our rights to Missouri River water. The Mni Wiconi Bill does not protect nor guarantee Treaty rights. This important issue will be addressed more fully at the meeting on October 25 (see below).

Mni Wiconi and Water Rights

- **Mni Wiconi will affect Indian water rights.** Mni Wiconi could be used to determine how much water Oglalas are entitled to. The federal government or the state government could point to Mni Wiconi and claim that the Mni Wiconi pipeline water represented the Oglalas share of the Missouri River water. In short, Mni Wiconi is water quantification. If we accept Mni Wiconi our water rights will be jeopardized.

Mni Wiconi and Indian Water Law

The cornerstone of Indian water law is the "Winters Doctrine." The Winters Doctrine is the Doctrine of Reserved Rights. O.S.T. officials and employees are misleading people when they say "Use It Or Lose It." "Use it or lose it" is the name of the O.S.T. video that is being used to campaign for Mni Wiconi. Mni Wiconi supporters are implying that if we do not support the Mni Wiconi Pipeline we will lose our right to the use of Missouri River water. Their claim is misleading. Our water rights are not lost by non-use. Even if non-Indians are already using the water our rights take precedence. This is the main point of the Winters Doctrine and the Winters Doctrine has been upheld over the years by a series of U.S. Supreme Court Decisions. Those who say "Use It Or Lose It" must not know about the Winters Doctrine and its importance to Indian water rights.

Mni Wiconi and Your Water Bill

- **Mni Wiconi water will not be free.** You will pay for the cost of moving the water through the pipes from the Missouri River. If extra electricity is needed to move the water the Mni Wiconi Bill authorizes the administrator of the Western Area Power Administration to pass the costs on to the water supply systems. That means that part of that cost will be passed on to the O.S.T. The O.S.T. will then charge you, the consumer, for the use of the water. Simply put, **you will have a regular water bill to pay and the price will go up if electric costs rise.**

Who Gets The Water?

- **Non-Indians living off of the Pine Ridge Reservation will get approximately 2/3 of the water coming through the Mni Wiconi pipeline.** Non-Indian residents on Pine Ridge Reservation will also be eligible for Mni Wiconi water. 8,000 off reservation non-Indians will get about 2/3 of the Mni Wiconi water and Pine Ridge Reservation residents will get about 1/3. Yet Mni Wiconi is being presented as water for Indians.

Come to Porcupine CAP Office on October 25 at 6 p.m. All interested persons are asked to attend for an update on Mni Wiconi. A meal will be provided.

Prepared by the Native Resource Coalition, P.O. Box 93, Porcupine, S.D., 57772

Mni Wiconi, Public Law 100-516
-*STOP*-

Mni Wiconi: Vote No on November 14

Mni Wiconi and Your Water Bill

* Mni Wiconi water will not be free. We will pay for the water. The O.S.T. will charge us for the water. We will have a water meter. We will have a regular water bill. We will have to pay for our own water - the water that is guaranteed to us under the 1868 Ft. Laramie Treaty!

Scare Tactics

* O.S.T. employees and Senator Daschle are claiming that all of the water on the Pine Ridge Reservation is contaminated. These are scare tactics. In fact, the 1986 study by the Rural Coalition concluded that there is plenty of good water in shallow aquifers underlying the reservation. The study also showed that there are several deeper aquifers that underlie the Pine Ridge Reservation that could provide water but are not used.

Alternatives to Mni Wiconi

* Mni Wiconi is scheduled to take up to 9 years to complete. We need water now. There are good sources of water beneath the reservation and we could get good quality water by drilling new wells into the shallow aquifers below us that contain large quantities of good, safe water. And we would control our own water supply. Instead, the U.S. Government and the State of South Dakota are using the Oglalas so that they can get water for non-Indians living in western South Dakota. 2/3 of the water from Mni Wiconi is supposed to go to those non-Indians.

Prepared by the Native Resource Coalition, P.O. Box 93, Porcupine, S.D., 57772
Factsheet Number 2 on Mni Wiconi

Service Area for Mni Wiconi

O.S.T. Mni Wiconi Office and Senator Daschle say that all reservation residents will be served by the pipeline. Their claim is not backed up by the Mni Wiconi Bill. The Mni Wiconi Bill clearly states that only those communities noted in the 1988 engineering study will get water. That study showed that LaCreek District, Red Shirt Village, Batesland, and Wakpamni will not get water.

Now they tell us they are doing a new engineering study that will include those communities. Should we believe what they are saying? - that every household on the Pine Ridge Reservation will have pipes running to it from the Mni Wiconi pipe? Have you seen a plan?

Prepared by the Native Resource Coalition
Factsheet #5 on Mni Wiconi

ATTACHMENT #7

Study of Groundwater Quality
on Nine Reservations. 1986
study by the Rural Coalition

CHAPTER 8. PINE RIDGE RESERVATION GROUNDWATER QUALITY

A) Summary of Aquifers Under the Pine Ridge Reservation

The Pine Ridge Reservation has four kinds of aquifers under it: alluvial, windblown sand, bedrock, and deep artesian.

Alluvial aquifers are old river terraces (beaches) are located in river valleys across the Reservation. Some of these aquifers can supply plenty of water to household or livestock wells. Their water table can move up and down depending on the amount of rainfall. Alluvial aquifers sitting on top of Pierre Shale bedrock have bad water quality, but alluvial aquifers in other rock types can have good water. (The Pierre Shale is at the surface mainly along the White River.)

Windblown sand aquifers are found in the sandhills in the southern part of the Reservation. These aquifers can generally support quite a bit of good-quality water. The water table goes up and down depending on rainfall, though.

Bedrock aquifers are located under the Reservation, and are called the Ogallala, the Arikaree, and the White River aquifers. Sometimes the Ogallala and the Arikaree are lumped together and called the High Plains Aquifer.

The Ogallala (with its Valentine Formation) comes up from the south into the southern part of the Reservation. It usually has plenty of good-quality water.

The Arikaree covers most of the Reservation except for the northern and western parts along the White River. It usually has plenty of good quality water. It is the most common source of water on the Reservation. Martin and Pine Ridge get their water supply from the Arikaree aquifer. This aquifer could be developed further for irrigation.

The White River Group (with its Brule and Chadron Formations) lies under the northern and western parts of the Reservation. In certain places it could be used for well water, but not generally.

Deep artesian aquifers exist under the Reservation. They include the Dakota Sandstone, the Inyan Kara, and the Minnelusa (under the entire Reservation), and the Madison and Red River (under the northern part of the Reservation). None of these deep aquifers is used on the Reservation because there is plenty of good water in shallower aquifers, which are cheaper to drill for. The water quality in these deep aquifers is usually quite saline (salty).

BLACK HILLS TETON SIOUX
NATION COUNCIL
(TETON SIOUX NATION)

Representative Tom Belville, Chairman
Energy & Water Development,
Subcommittee on Appropriations
Washington, D. C. 20515

APR. 03 1990

Honorable Senator/Congressmen:

We are a nation under God, recognizing this, we walk with pride and with the endowed knowledge that we are gazed upon with the eyes that have molded us as one and equals.

We, the Indians of this Turtle Continent, are many, we number approximately 283 distinct tribes. We admire one another and respect one another for the Great Spirit has blessed each of us as tribes with unique cultures, reenforced with an identifying language. Yes, we were given the gift of Spirit, and the necessary intellect to develop our own language, custom, and the spiritual insight to know a true faith that prohibits us from wantonly annihilating other human beings who also were created with an inherent spiritual hope!

A short four century past, we, on this Turtle Continent number well over 12 million, co-existing with respect and honor, protecting our children and our elders from the elements, for we recognize these as the strength of a multitude of nations, protecting one another rights to those things a vision identifys for us, to value. One of those values, is the freedom we as nations enjoy, however, under the Government of the United States, our numbers have been decimated to a mere half a million to date.

We hear, indeed with skepticism, that the United States had its origin, states self-evident truths including "that all men area created equal, that they are endowed by their Creator with certain unalienable rights, that among these, are life, liberty, and the pursuit of happiness. That, to secure these rights, governments are instituted among men, deriving their just powers from the consent of the governed; that, whenever any form of government becomes destructive of these ends, it is the RIGHT of the people to alter or to abolish it. . . ."

The Black Hills Teton Sioux Nation Council believes,as do all Indian Nations, in similar moral foundations and principles. Therefore, we collectively recognize the wishes of the people as expressed by the rejection of the "Mni Wiconi Project" by vote of the Indian people who have exercised a choice of freedom guaranteed by our democratic ideals.

Also please review the attached, which are self evident with the essential substance to better serve the American people, and the aboriginal full blood Indians across this country.

With Honor and Respect, we are;

Historian/Research Director

Garfield Grass Rope /Vice Chairman
for Chairman,
Black Hills Teton Sioux
Nation Council
Pine Ridge, SD 57770

Secretary,
Black Hills Teton Sioux
Nation Council
P. O. Box 48
Pine Ridge, SD 57770

Mr. BEVILL. Thank you for your very fine presentation, and we will certainly consider your testimony, and I hope we can be of some help to you.

Ms. FIRE THUNDER. Thank you very much.

WEDNESDAY, APRIL 4, 1990.

PASSAIC RIVER FLOOD CONTROL PROJECT

WITNESS

HON. DEAN GALLO, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW JERSEY

Mr. BEVILL. I see our friend and colleague, Congressman Gallo, is here. Will be glad to hear your testimony at this time.

Your prepared statement will be made a part of the record, and you may summarize or proceed as you wish.

Mr. GALLO. Thank you, Mr. Chairman.

There was also a statement that was going to be hand delivered from our colleague, Congressman Torricelli. I don't know whether that was delivered or not.

Mr. BEVILL. I am sure he will get it here. He can get it here any time within five days, if you want to mention that to him.

Mr. GALLO. Fine. Thank you.

I would like to thank you for allowing me to appear before you today concerning the continuing need for funding of the Passaic River Dual Inlet Tunnel Diversion Project.

I would also like to thank my fellow colleagues, Bob Torricelli and Bob Roe, who have been very, very much involved in this overall project.

The Passaic River Tunnel Project is a multi-year effort that needs a substantial funding source to allow continuation of this program.

My purpose today is to ask that the committee's commitment and dedication that has been shown in the past years be continued for this year.

I urge the Members of this subcommittee to appropriate the necessary funding to complete the next phase of the Passaic River Tunnel Project. The funds requested for fiscal year 1991 will be used to continue pre-construction engineering and design costs. A lot of time and effort has already been put into this project, and we must proceed with the funding this year.

One year ago today I came before this committee. At that time, I explained the history of the problem and the devastation that occurs as a result of flooding in this basin.

Let me again share with you why this project could very well be our last and only hope for a solution.

The Passaic River Basin has been recognized as one of the most serious flood problems on the East Coast. The Basin contains some of the most densely developed metropolitan areas in the country. The development of flood plains due to heavy residential and industrial growth and its location in the East Coast storm belt has led to a history of severe hardship during flooding.

Since records have been kept, there have been 19 major floods in the Passaic River Basin. Half of these occurred before 1960, and the other half during the last 30 years.

The lower Basin has been declared a Federal disaster area seven times in the last 20 years. You only are to look at the flood of 1984 to understand the devastation that takes place in the Basin.

The 1984 flood, damaged some 6,400 properties at a loss of $355 million. Homes were under nine feet of water. More than 9,000 people were evacuated, four lives were lost, and nearly 4,000 homes suffered long-term loss of utility service.

Since that flood, we have redoubled our efforts to begin the construction of the tunnel project and to protect the public health and safety of the residents.

I am satisfied that the Army Corps has chosen the only viable solution. The recent approval of the feasibility report and environmental impact statement for the mainstem Passaic River by the Chief of Engineers provides additional proof that the plan is the appropriate response to solve the flooding problems of the Passaic River Basin.

The comprehensive Passaic River Tunnel Project, including the preservation of 5,350 acres of wetlands and 5.9 miles of channel modification, incorporates a state-of-the-art concept, the construction of a 13.5 mile underground water diversion tunnel, and a 1.2 mile spur tunnel.

The flood control plan has the support of most of the residents of the Passaic River Basin, who have seen what this river can do, and want to prevent future devastation.

Most of the remaining concerns with the construction of the flood diversion tunnel involve its terminus. There are some government officials who oppose the project solely because of the placement of the terminus. For the record, I wish to once again state my commitment to moving the terminus point to ensure safe water flow into Newark Bay, and I might add that this is the understanding and agreement of both Congressman Roe and Congressman Torricelli.

I believe that this is the best way to address the remaining concerns and by doing this, should attract additional support for the critical project.

The project is a good solution, and I urge my colleagues on the subcommittee to take the next step and fund this worthy project. It's time to stand firm on the urgent need for flood control in the Passaic River Basin.

I want to thank you, Mr. Chairman.

If there are any questions, I would be glad to try and answer them.

[The statement of Hon. Dean Gallo follows:]

TESTIMONY BY REP. DEAN GALLO
NEW JERSEY, 11TH DISTRICT
BEFORE THE SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
WEDNESDAY, APRIL 4, 1990

IN SUPPORT OF CONTINUED FUNDING FOR THE POMPTON/PASSAIC RIVER DUAL INLET TUNNEL DIVERSION PROJECT TO PROVIDE FLOOD PROTECTION IN THE BASIN

MR. CHAIRMAN: I thank the Gentleman from Alabama, Mr. Bevill, for this time today allowing me to speak about the need for continued funding of the Passaic River Dual Inlet Tunnel Diversion Project. I would also like to thank my fellow colleague from New Jersey, Congressman Bob Torricelli for his continued efforts on this important project.

The Passaic River Tunnel Project is a multi-year effort that needs a stable funding source to allow continuation of this program we have enjoyed to date.

My purpose today is to ask that the committee's commitment and dedication that has been shown in the past years be continued for this year. I urge the members of this subcommittee to appropriate the necessary funding to complete the next phase of the Passaic River Tunnel Project.

The funds requested for Fiscal Year 1991 will be used to continue preconstruction engineering and design including: topographic mapping, subsurface testing and foundation and materials analysis, hydrologic and hydraulic studies including WES physical modeling, cost engineering, fish and wildlife, cultural resources, economic, real estate, coordination and public involvement studies. A lot of time and effort has already been put into this project and we must proceed with the necessary funding for this year.

One year ago today I also came before this committee. At that time I explained the history of the problem and the devastation that occurs as a result of flooding in this basin. Let me again share with you why this project could very well be our last and only hope for a solution.

The Passaic River Basin has been recognized as being one of the most serious flood problems on the East Coast. The Basin contains some of the most densely developed metropolitan area in the country. The development of its floodplain, due to heavy residential and industrial growth, and its location in the East Coast stormbelt has led to a history of severe hardship during flooding.

Since records have been kept, there have been 19 major floods in the Passaic River Basin. Half of these occurred before 1960 and the other half during the last 30 years. The Lower Basin has been declared a Federal Disaster Area 7 times in the last 20 years.

The worst flood, which is still considered the flood of record in most of the Basin, occurred in 1903. If that record flood were to happen today, it would result in billions of dollars in damage.

Today, with state-of-the-art warning devices in place, we can be assured of an earlier warning. However, we would still face greater overall devastation than we would have from previous floods, because there has been an increase of 2.4 million people living in the area.

You only have to look at the flood of 1984 to understand the devastation that takes place in the Basin. The 1984 flood damaged some 6,400 properties at a loss of 355 million dollars. Homes were under 9 feet of water, more than 9,000 people were evacuated, four lives were lost and nearly 4,000 homes suffered a long-term loss of utility service.

Since that flood, we have redoubled our efforts to begin the construction of the Tunnel Project and to protect the public health and safety of the residents.

I am satisfied that the Army Corps has chosen the only viable solution. The recent approval of the Feasibility Report and Environmental Impact Statement for the Main Stem Passaic River by the Chief of Engineers provides additional proof that the plan is the appropriate response to solve the flooding problems of the Passaic River Basin.

The comprehensive Passaic River Tunnel Project, which includes the acquisition for preservation of 5,350 acres of wetlands and 5.9 miles of channel modifications, incorporates a state-of-the-art concept -- the construction of a 13.5 mile underground water diversion tunnel and a 1.2 mile spur tunnel. These tunnels would take water from the middle of the Basin during high water bypass natural and immovable surface barriers that have always prevented the safe flow of flood waters and allow the water to empty into a safe area. Also, the retirement and preservation of more than 5,000 acres of wetlands would replenish the underground aquifer and provide for the necessary natural storage areas for water within the Central Passaic Basin.

This plan is the result of an exhaustive review by the Corps of all possible options. The State of New Jersey has been directly involved in the planning of this project and in 1984 endorsed the selection of the tunnel plan from among a broad range of alternatives. Since 1981, the New Jersey Department of Environmental Protection has been on record as offering to act as the non-federal sponsor for the project.

In addition, the flood control plan, including the tunnel construction, has the support of most of the residents of the Passaic River Basin, who have seen what this river can do and want to prevent the devastation that is possible in the future.

Most of the remaining concerns with the construction of the flood diversion tunnel involve its terminus. There are some government officials who oppose the project solely because of the placement of the terminus. For the record, I wish to once again state my commitment to moving the terminus point to ensure safe water flow into Newark Bay. I believe that this is the best way to address the remaining concerns and by doing this should attract additional support for this critical project.

This project is more than construction of a tunnel, but the tunnel is the center piece of flood control efforts and the only real hope we have to avoid future disasters.

It is a good solution and I urge my colleagues on the Subcommittee to take the required Congressional action and provide the next step in funding this worthy project. It is time to stand firm on the urgent need for flood control in the Passaic River Basin.

Thank you, Mr. Chairman, for your time and I look forward to your support.

[The statement of Hon. Robert G. Torricelli follows:]

STATEMENT OF

REPRESENTATIVE ROBERT G. TORRICELLI

SUBMITTED TO
THE HOUSE APPROPRIATIONS
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

APRIL 4, 1990

Mr. Chairman, I would like to begin by thanking you for this opportunity to share with the subcommittee my views on Passaic River Basin flood control proposals. The Passaic River Basin, which includes central Passaic County, southern Bergen County and western Hudson County in New Jersey, faces two realities.

The first, as years of hearings on major water-related public works projects have taught this subcommittee, is that this region has the second most serious flooding problem in the country. Over the years, floods have resulted in hundreds of millions of dollars of property damage and, have cost several people their lives. In April of 1984, a monstrous flood overwhelmed the Passaic River Basin, causing $330 million in property damage, the loss of three lives, and injury to scores of others. Looking back on this tragedy and others before it, it is no wonder that this region averages $84 million a year in flood damage. The Passaic River Basin occupies 10.5 percent of the area of New Jersey, encompasses a population of 2.5 million people, includes 112 municipalities, and is the site of 48,000 residences and businesses. If a flood the size of the devastating 1903 deluge were to occur today, estimated damages would approach $2 billion.

The second reality is that years of environmental efforts are beginning to show progress. In recent years, there has been a concomitant increase in Passaic River water quality and the amount of riverbank land used for recreation. In fact, the Corps has implemented the federally-funded East Bank Passaic River Erosion Control Program, to control erosion and create parklands along the lower Passaic River. In many towns, land along the Passaic River is the only public parkland available.

We must protect and balance both interests: the need for flood control and the need for environmental restoration. Such a balance cannot include extensive use of dikes, dams, and levees; nor can it leave property and lives subject to the risk of flooding. The balance can be achieved only by the plan endorsed by Mr. Gallo, a member of the Appropriations Committee, Mr. Roe, and myself - the Dual Inlet Tunnel Plan with the Newark Bay extension. Let me make it clear that my support for the Flood Tunnel is entirely contingent on its inclusion of the Newark Bay extension and thus, no third river outlet, no reliance on levies, dikes, and dams, and no loss of property and lives.

Congress initiated flood-control efforts in the region when it authorized the Army Corps of Engineers to study ways to control flooding in the Basin in 1976. Under guidelines issued by the House of Representatives, the Corps was to consider a number of alternatives including tunnels, dikes, walls and reservoirs. Congress stipulated that any plan should provide protection from a 100 year flood, should be cost effective, should consider public acceptance, and should not rely on the extensive use of dikes, dams and levees.

The Army Corps has, over the years, considered many flood-control plans including a number of different tunnel options. In 1988, the Corps submitted a 480-page proposal outlining the $879 million Dual Inlet Flood Tunnel Project. Thirty-nine feet in diameter and 13.5 miles long, the main tunnel will plunge 450 feet into the earth in an effort to divert flood waters from low-lying areas in central Passaic County down to the lower Passaic River near Nutley. The tunnel plan also takes into account the effects that such a project could have on aquifers in the region. Since the tunnel is merely moving floodwater downstream more quickly, the New Jersey Department of Environmental Protection and the Environmental Protection Agency have both determined that it will not lessen aquifer-replenishing groundwater. To be sure that enough wetlands remain to replenish the aquifers, the tunnel plan calls for the acquisition and protection of 5,350 acres of wetlands.

Unfortunately, the Tunnel will increase the flood potential in southern Bergen and western Hudson Counties, so the Corps has planned an extensive 26-mile system of five-to-thirteen feet high levees for this area. To disturb this invaluable public resource by filling it with levees would simply undo all of the progress we have made thus far. Therefore, this tunnel plan provides residents in the Passaic River Basin with something less than a complete answer to their flooding problem. While the plan addresses flooding in central Passaic County, it merely shifts the burden to my district in southern Bergen and western Hudson Counties. If the Corps' plan were implemented, it would eliminate many newly established and irreplaceable recreational areas along the banks of the lower Passaic River. Although the Corps' plan calls for landscaping the levees in an effort to minimize damage, park lands, playing fields and boating activities would be irreparably disturbed by mountainous levees.

Furthermore, the Corps' plan also contradicts the Congressional guidelines for flood control in the region as well as federal funding efforts for the refurbishing of parklands along the Passaic. The Congressional guidelines included in the 1976 authorization of the flood-control study were clear: The Corps was to pursue not only the most cost-effective plan, it was also supposed to pursue the option that would produce the least amount of community friction and the fewest levees and dikes.

What is more, the federally-funded East Bank Passaic River Erosion Control Program, which the Corps has implemented to control erosion and create parklands along the lower Passaic River, will have been a waste of federal funds if the present Corps' tunnel plan is pursued. In essence, federal funds will have been spent on the creation and then destruction of riverbank parklands.

Recognizing that the present Corps' tunnel plan is not feasible, some have supported the buyout of homes and businesses. This sounds good in theory, but it is not realistic in practice. Thousands of citizens and businesses cannot be moved without great expense and significant local opposition. With new home prices in my district averaging about $250,000, there are few places in the area that people in the flood plain could afford to move to. Besides, people will not simply leave houses that, over many years, have become homes.

As the Representative of southern Bergen County, a region that would be greatly affected by the flood-control effort, I have a real stake in seeing that the best possible plan is pursued. The only reasonable plan is for the Corps to move ahead with the extension of the flood tunnel to Newark Bay. By doing this, the cost of the tunnel project will rise, but local support will remain strong as parklands and homes are preserved.

Many are concerned about the $300 million price tag of the tunnel extension. The additional price of adding the 13 miles of tunnel needed to reach Newark Bay is still cost effective. Assuming the conservative flood damage figure of $84 million a year, the entire project will pay for itself in a relatively short time. The question then becomes what the cost is, in dollars and lives, of not acting.

Mr. Chairman, I also would like to take this opportunity to discuss other projects that affect my Congressional district. Another project concerning the Passaic River is the removal of pilings, barges, and other debris from the River. This debris creates water pollution, makes development difficult, and makes both commercial and recreational transportation dangerous.

The removal of this debris is part of the New York Harbor Collection and Removal of Drift project. The Army Corps currently considers the extension of work into the Passaic River a new construction start and thus ineligible for inclusion in the existing authorization.

To authorize the Army Corps to proceed with the Passaic River clearance, I intend to amend the authorization bill through the Public Works Committee. I hope that I will have this Subcommittee's support in funding this project when it is authorized.

Another concern to towns in Bergen and west Hudson County has been flooding along the Hackensack River. Hardly a year goes by when heavy rains and high tides conspire to flood roads, homes, and businesses along the river and its tributaries. Every full moon, portions of Hackensack and the Meadowlands find themselves underwater.

The history of the Army Corps of Engineers' involvement in flood control along the River dates back to the Flood Control Act of 1958. Since then, several studies have been completed and solutions have been offered. In 1982 the New York region of the Corps finished a report. Its recommendations for Federal funding for a tidal flood gate at the mouth of the Hackensack were dismissed by the North Atlantic division because the cost/benefit estimates were judged to be faulty. In the aftermath of the discredited 1982 report, the 1988 Water Resources bill authorized a new study using current housing, topographic and flood data to determine the possible damage from a 100, 50, and 10 year flood.

Unfortunately, this study was carried out using data from 1985. In addition, although the Hackensack Meadowlands is among the most valuable tracts of real estate in the nation, the Corps' study overlooks the potential value of currently undeveloped land that is threatened by flooding. However, the Corps plans to do a reconaissance study on more modest flood control measures, including a gate at the Route 46 bridge in Little Ferry. This study will be funded solely by $70,000 from the State of New Jersey and should be finished this summer. The reconaissance study will be followed by a cost-shared feasibility study in FY91 using $600,000 in Federal funds already set aside for Hackensack River flood control in FY90 but still unused.

Although the initial study will not require appropriations, I bring it to the attention of this subcommittee in hopes that it will lend its support to the Army Corps' Hackensack River flood control efforts when they reach the implementation stage.

Mr. Chairman, the Subcommittee is also taking the testimony of my colleague from New Jersey, Mr. Gallo, a member of the Appropriations Committee. He, along with Mr. Roe, endorses the tunnel plan with the extension to Newark Bay -- a plan I have supported all along. The Subcommittee is also hearing testimony from PROTECT, which also endorses the Newark Bay extension. I hope this Subcommittee and the full Committee will fund the project to the fullest extent necessary, but only if it is extended to Newark Bay so there will be no flood threat whatsoever to southern Bergen County and no dikes or levees are constructed and parklands remain unaffected by construction and operation.

Last month I testified before the Public Works Subcommittee on Water Resources and I hope it will reauthorize the project according to these criteria. A responsible solution must protect the interests of all those who live and work in the Passaic River Basin. Thank you.

Mr. **Bevill**. We will certainly work with you, Dean, and do the best we can.

Mr. **Gallo**. Thank you, Mr. Chairman.

Mr. **Bevill**. Thank you.

Wednesday, April 4, 1990.

APPALACHIAN REGIONAL CENTERS

WITNESS

LYMAN V. GINGER, EXECUTIVE DIRECTOR, CARDINAL HILL HOSPITAL OF LEXINGTON, KENTUCKY

Mr. **Bevill**. Next we have Mr. Lyman Ginger.

Glad to have you with us, Mr. Ginger. You may proceed as you wish.

Mr. **Ginger**. Thank you.

Mr. Chairman and Members of the committee, on behalf of the Board of Trustees of Cardinal Hill Hospital, I want to thank you for the opportunity of presenting this information to you this afternoon and for the interest of the stenotypist.

I will not be reading the report, but we sent the reports in last week, and you have it, all the basic content there in that report.

So I would like to discuss this in order to make it short and to conserve your time and to present points that I think are most important in the consideration of this request.

Cardinal Hill Hospital is a rehabilitation hospital and is nonprofit. There are only two hospitals in Kentucky and rehabilitation that are the size of this one.

One is in Louisville. If you draw a line from Northern Kentucky from Louisville in the Tennessee border and you take all of the central and eastern part of the state, Cardinal Hospital stands alone as a rehabilitation hospital.

Cardinal Hill has accepted patients and does accept patients from every county in the state. From 18 states outside of Kentucky, it also accepts rehabilitation patients who have stroke, head injury, spinal cord injury, and related type of ailments and illnesses.

As a result of that, we serve the eastern part of Kentucky which does not have a single rehabilitation hospital located in that area. One-third of our patients come from the Appalachian Region, and as a result of serving that many people, in order to keep their progress going, it's necessary for them to have outpatient treatment once they leave the hospital.

And for that reason, we are so far removed from them that we cannot provide that because they simply cannot come back once a week or twice a week to continue with their treatment after they have been an inpatient.

There are certain facts that stand out that I would like to call to your attention, which show why we think this is so important. Kentucky residents suffer 15,000 strokes per year, and that is twice the natural average. Only one other section of the United States comes close to that, and that is in one of the middle western states.

Kentucky residents sustain twice the national average per year of spinal cord injuries, resulting in paralysis or semi-paralysis.

The residents have a traumatic accident rate that is 14 to 16 percent higher than the national average, and the Kentucky residents sustain traumatic head injuries at an annual rate that is 25 percent higher than the national average.

The researchers who completed the data and who have been working on this for the past 10 years cannot understand the why of this, but it's a fact that this does occur.

Part of this and the accident rate is because of the accidents that occur in coal mines, in the trucking industry, and in accidents that occur from similar kinds of operations.

Now, because of this, and since these services are not there, since our hospital is non-profit and the people who serve on our Board are volunteer members, we are anxious to extend this service to the mountain region of Kentucky, sections of West Virginia, a little part of Tennessee, and a little of Ohio.

Now, what we are proposing to do is to establish an outreach program that will have satellite centers for the outpatient kind of service that these people need.

First of all, we want to examine the people that seem to need it, as referred to us by physicians, and we have a group of specialists in the field of rehabilitation in cooperation with the University of Kentucky to carry on this program.

In addition to this business of evaluation to see what they need, we then want to be able, if they must go to a hospital, to send them into a hospital for in-service treatment to get them on the road to recovery; and then when they come home, to continue with that treatment by having the outpatient centers located in the strategic position.

In order to analyze the problems, it's necessary in this kind of illness, it's necessary for us to have x-rays available so we may very carefully analyze the head, the back, the spine, and the problems connected with what happens when people have strokes.

And so we are asking for some equipment. We are asking for mobile units to take us out to these patients when they are not—when they are unable to come back in.

Now, along with this, we expect to have and hope to plan and we have already worked with hospitals and with other areas in that region, which will give us the opportunity to provide the outpatient service for people who need it.

We believe that by establishing, for example, Ashland at one end, Somerset at the other, Pike County at the other, and if you know our state, you know this goes for about 300 miles through the Appalachian Region, and to have this kind of service which again is operated as a non-profit service.

We are not trying to make money. We are trying to provide service for people who so badly need it. And we believe that by working with the areas of West Virginia we mentioned and Tennessee and the small section of Ohio, that we can provide a service that has never been provided for the citizens of this part of the country.

So we are pleased to present to you today this request. We are sure that this kind of service is badly needed. We are also sure that the people, the citizens in that part of the state, will benefit greatly by having this kind of service provided for them.

We thank you very much for letting me appear and presenting this information to you and making this request. We genuinely appreciate it.

Mr. Bevill. Thank you for your fine presentation.

[The statement of Lyman V. Ginger follows:]

TESTIMONY OF

DR. LYMAN V. GINGER
EXECUTIVE DIRECTOR
CARDINAL HILL HOSPITAL

PRESENTED TO

THE SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
OF THE U.S. HOUSE OF REPRESENTATIVES

REGARDING

CARDINAL HILL HOSPITAL SATELLITE CENTERS

APRIL 4, 1990

Mr. Chairman and distinguished Members of the Subcommittee, I want to thank you for this opportunity to appear before you to testify regarding the proposal of the Cardinal Hill Hospital to greatly enhance health care in the Appalachian Region.

Cardinal Hill Hospital is a non-profit rehabilitation hospital located in Lexington, Kentucky. It is the only rehabilitation hospital between Louisville, Kentucky and the Tennessee border on the south. Cardinal Hill is the hub of rehabilitation activity for almost one-half of the Commonwealth and, last year, accepted patients from every county in the state, as well as from 18 other states. Cardinal Hill Hospital currently provides inpatients specialty programs for patients with stroke, spinal cord injury, and neuromuscular and orthopedic disabilities. The Hospital's outpatients specialty programs include preschool developmental stimulation, comprehensive pain management, occupational medicine, and outpatient therapeutic services primarily for residents of the Lexington area.

The need for rehabilitation services became so great in this region that the Board of Trustees of Cardinal Hill Hospital raised more than $7 million from interested citizens and corporations to expand the Hospital by adding 70 beds with other appropriate facilities to provide a program that is nationally accredited and one of the outstanding programs in the United States.

Even though Cardinal Hill is not a charity hospital, it provides a substantial amount of service for patients who are unable to pay either because of not having sufficient insurance coverage or because they require treatment for such a long period of time that their insurance coverage is exhausted.

Once patients have completed their inpatient program, it is to their advantage to return to the Hospital for outpatient treatment for varying lengths of time. Most of these patients are unable to travel back to the Hospital for follow-up treatment from distances that exceed 50-60 miles; therefore, follow-up treatment is almost completely lacking for these patients from Eastern Kentucky.

In 1986, the U.S. Census Bureau estimated that 1,600,000 people were residents in the 57 counties of the 8 primarily rural Kentucky Area Development Districts served by Cardinal Hill. In 1989, the Kentucky residents of Appalachia are likely to sustain trauma and disease-related disabilities at a rate significantly higher than the national norms. Without access to appropriate comprehensive medical rehabilitation facilities, a disproportionately high number of patients will be vocationally handicapped or unemployable, and financially dependent upon federal, state and private disability programs unnecessarily as a result of untreated physical and cognitive impairments. The limitation imposed upon them by a disability will be compounded by social, economic, and educational conditions which are among the lowest in the country.

Despite the increased need for rehabilitation services already outlined, only 3.2 percent of all rehabilitation hospitals are located in the east south-central United States, and only Cardinal Hill Hospital is in this entire geographic area of Eastern Kentucky.

Information Compiles by Appalachian Regional Healthcare, the University of Kentucky, the Kentucky Head Injury Foundation, and the Kentucky State Cabinet for Human Resources indicates a disproportionately high incidence of disabling conditions in the state of Kentucky (most notably in the Appalachian region) as compared with national figures, while the number of treatment centers in the Appalachian region are practically non-existent and are entirely inadequate for service for this area.

-Kentucky residents suffer 15,000 strokes per year -- twice the national average. They live in what is known as the "stroke belt", primarily in the southeastern United States.

-Kentucky residents sustain twice the national average per year spinal cord injuries resulting in paralysis.

-Kentucky residents have a traumatic accident rate that is 14-16 percent higher than the national average, Residents of Appalachian Eastern Kentucky have an accident rate that exceeds that of the state as a whole by an additional 20 percent.

-Kentucky residents sustain traumatic head injuries at an annual rate that is 25 percent higher than the national average.

-Kentucky residents have three times the national rate of diabetes. Residents of Appalachian Eastern Kentucky have five to six times the national rate of diabetes.

-Kentucky has twice the national average rate of births to Caucasian teenage mothers. These newborns are at increased risk for extreme prematurity and at high risk for severe developmental delays.

Despite recent advances in knowledge and treatment modalities, there are three areas of glaring deficiencies:

-First, the lack of timely access to appropriate comprehensive, acute rehabilitation facilities for all the disabled.

-Second, the lack of outpatient and follow-up treatment facilities in the local communities.

-Third, the lack of educational efforts in the area of preventing disability and failure to teach family members how to provide appropriate care for the patients.

For the past three years, selected personnel of Cardinal hill Hospital have been collecting data and developing a network for services that can enable the central population of the Appalachian region, including some areas in West Virginia, Ohio and Tennessee, to receive much needed rehabilitative care and treatment. The most strategic locations have already been identified, contacts have been made with doctors and local health service providers and arrangements have been made either for renting available space or for constructing adequate clinic space to provide the area with facilities for follow-up treatment. These facilities would be used for original evaluations and recommendations to patients. The patient, once evaluated, might come to Cardinal Hill Hospital for intensive inpatient and, when the appropriate time came, would go home to receive outpatient treatment in one of the Satellite Centers being planned. This network would include the establishment of 8-10 satellite centers and four mobile units that would utilize both Cardinal Hill Hospital personnel and existing community resources to deliver services.

The rural satellite centers will be placed strategically throughout the Appalachian counties, enabling most of the residents to be within no more than a 30-mile radius of services. Cardinal Hill hospital personnel - physical, occupational, an speech therapists, physiatrist, nurses, social workers, psychologists and vocational counselors - will be utilized to develop, train, and staff the locally based service components.

These Centers will:

-identify those patients in need of rehabilitation services as soon as possible after the onset of disability, to assure timely access to comprehensive acute rehabilitation.

-evaluate the ongoing rehabilitation needs of the patient and coordinate the provision of those services through available resources by working cooperatively with the local health care providers in these clinics to increase the local knowledge base in the prevention, evaluation, and treatment of rehabilitation problems, and provide comprehensive outpatient therapeutic treatment,

-provide follow-up care for patients who have completed acute rehabilitation, focusing on the medical and educational service s necessary to prevent development of secondary complications and maintaining the patients at home or in the least restrictive level of institutional care,

-coordinate the allocation of available resources to facilitate the patient's community re-integration and return to work.

From the information secured regarding the cost of building, renovation, and securing equipment, the total cost will be between $89.3 and $9.7 million.

The funding will provide for four mobile units completely equipped, two X-ray units installed in strategic locations and a complete computer system tc tie the Centers together and to tie them in to Cardinal Hill Hospital as a central location.

After funds are secured, Cardinal Hill Hospital is prepared to begin immediately to develop the following Satellite Centers:

Ashland, Ky (to serve Huntington, West Virginia, Ironton, Ohio and other location in the northeastern area). This will anchor the northeastern end of the geographic area.

Somerset, KY - rental and equipment. This will anchor the south central end of the geographic area.

Pikeville will serve the east central area and South Williamson, KY, will serve Kentucky and the West Virginia area.

Other centers will include the Appalachian Regional Hospital, Hazard, Kentucky, the Kent Krum Speech Clinic, Hazard, Kentucky, the Corbin Baptist Hospital, the Hindman (Alice Lloyd College or Hindman Settlement School), the Carl Perkins Vocational Center, Morehead, and Breathitt County.

Cardinal Hill Hospital is highly regarded in the field of rehabilitation and is prepared to provide the leadership and specialized resources required to develop and implement such regional Centers for the disabled. The Hospital is uniquely suited to this task, and the Board of Trustees' commitment to this effort is reflected in the completion of the new addition to the Hospital in 1988. Cardinal Hill Hospital is requesting assistance from the Federal Government to provide an appropriation to implement these regional Centers.

Mr. Chairman and Members of the Subcommittee, thank you for your time and interest.

CARDINAL HILL HOSPITAL
[illegible]

TO: Congressman Tom Bevill, Chairman
Subcommittee on Energy and Water Development

FROM: Lyman V. Ginger, Executive Director, Cardinal Hill Hospital LVG

RE: A Request for Partial Funding for the Establishment and Support of Satellite Centers to Provide Physical and Medical Rehabilitation in the Appalachian Region

DATE: March 23, 1990

CARDINAL HILL HOSPITAL

Cardinal Hill is accredited by CARF and is a free-standing, non-profit hospital located in Lexington, Kentucky. It received patients from every county in the Commonwealth of Kentucky and from 18 other states in 1989. It receives slightly more than one-third of its patients from the Appalachian region of Kentucky and West Virginia.

INPATIENT AND OUTPATIENT PROGRAMS

Cardinal Hill provides inpatient programs in stroke, spinal cord, head injury, amputee, arthritis, neuromuscular and orthopedic rehabilitation. Outpatient programs are provided for comprehensive pain management, work hardening, and developmental stimulation therapy (preschool).

PROPOSED SATELLITE CENTERS

It is proposed that Satellite Centers be established in ten locations in the Appalachian region of Kentucky for the purpose of evaluating persons who have suffered any of the catastrophic events mentioned above. The evaluation would be made by specialists and programs would be recommended for the patients, some of whom might be referred to the Hospital for inpatient treatment, others for outpatient treatment, and a carefully designed program of follow-up treatment for rehabilitation would be conducted in each of the Centers.

Contacts have already been made with doctors, health care providers, and hospitals located in the Appalachian region from the northern tip to the southern area which would cover about 300 miles.

The Satellite Centers would be distributed in such a way that outpatient treatment and services could be provided to all of this region in Kentucky and in parts of West Virginia, Ohio, and Tennessee.

Renovated buildings and newly built buildings will be equipped and provided with modern, up-to-date equipment for the very best treatment of these patients.

Funds are being requested to purchase equipment, build or remodel buildings and to purchase mobile units at a total cost of approximately $9.2 million.

A rehabilitation facility of the Kentucky Easter Seal Society

CARDINAL HILL HOSPITAL

APPALACHIAN REGIONAL CENTER FOR REHABILITATION

I. INTRODUCTION

Cardinal Hill Hospital is a non-profit rehabilitation hospital located in Lexington, Kentucky. It is the only rehabilitation hospital between Louisville, Kentucky and the West Virginia border and between Northern Kentucky and the Tennessee border on the south. Cardinal Hill is the hub of rehabilitation activity for almost one-half of the Commonwealth and, last year, accepted patients from every county in the state, as well as from 18 other states. Cardinal Hill Hospital currently provides inpatient specialty programs for patients with stroke, spinal cord injury, and neuromuscular and orthopedic disabilities. The Hospital's outpatient specialty programs include preschool developmental stimulation, comprehensive pain management, occupational medicine, and outpatient therapeutic services primarily for residents of the Lexington area.

The need for rehabilitation services became so great in this region that the Board of Trustees of Cardinal Hill Hospital riased more than $7 million from interested citizens and corporations to expand the Hospital by adding 70 beds with other appropriate facilities to provide a program that is nationally accredited and one of the outstanding programs in the United States.

Even though Cardinal Hill is not a charity hospital, it provides a substantial amount of service for patients who are unable to pay by either not having sufficient insurance coverage or by requiring treatment for such a long period that their insurance coverage is exhausted.

Once patients have completed their inpatient program, it is to their advantage to return to the Hospital for outpatient treatment for varying lengths of time. Most of these patients are unable to travel back to the Hospital for follow-up treatment from distances that exceed 50-60 miles; therefore, follow-up treatment is almost completely lacking for these patients from Eastern Kentucky.

II. THE APPALACHIAN POPULATION: CHARACTERISTICS AND REHABILITATION NEEDS

In 1986, the U.S. Census Bureau estimated that 1,600,000 people were resident in the 57 counties of the 8 primarily rural Kentucky Area Development Districts served by Cardinal Hill. In 1989, the Kentucky residents of Appalachia are likely to sustain trauma and disease-related disabilities at a rate significantly higher than the national norms. Without access to appropriate comprehensive medical rehabilitation facilities, a disproportionately high number of patients will be vocationally handicapped or unemployable, and financially dependent upon federal, state, and private disability programs unnecessarily as a result of untreated physical and cognitive functional impairments. The limitation imposed upon them by disability will be compounded by social, economic, and educational conditions which are among the lowest in the country.

Despite the increased need for rehabilitation services already outlined, only 3.2 percent of all rehabilitation hospitals are located in the east south-central United States, and only Cardinal Hill Hospital is in this entire geographic area of Eastern Kentucky.

III. THE NEED FOR APPALACHIAN REGIONAL OUTPATIENT REHABILITATION SERVICES

Information compiled by Appalachian Regional Healthcare, the University of Kentucky, the Kentucky Head Injury Foundation, and the Kentucky State Cabinet for Human Resources indicates a disproportionately high incidence of disabling conditions in the state of Kentucky (most notably in the Appalachian region) as compared with national figures, while the number of treatment centers in the Appalachian region are practically non-existent and are entirely inadequate for service for this area.

- Kentucky residents suffer 15,000 strokes per year--twice the national average. They live in what is known as the "stroke belt," primarily in the southeastern United States.
- Kentucky residents sustain twice the national average per year of spinal cord injuries resulting in paralysis.
- Kentucky residents have a traumatic accident rate that is 14-16 percent higher than the national average. Residents of Appalachian Eastern Kentucky have an accident rate that exceeds that of the state as a whole by an additional 20 percent.
- Kentucky residents sustain traumatic head injuries at an annual rate that is 25 percent higher than the national average.
- Kentucky residents have three times the national rate of diabetes. Residents of Appalachian Eastern Kentucky have five to six times the national rate of diabetes.
- Kentucky has twice the national average rate of births to Caucasian teenage mothers. These newborns are at increased risk for extreme prematurity and at high risk for severe developmental delays.

Despite recent advances in knowledge and treatment modalities, there are three areas of glaring deficiency:

- First, the lack of timely access to appropriate comprehensive, acute rehabilitation facilities for all the disabled.
- Second, the lack of outpatient and follow-up treatment facilities in the local communities.
- Third, the lack of educational efforts in the area of preventing disability and the failure to teach family members how to provide appropriate care for the patients.

IV. REGIONAL OUTREACH COMPONENTS - 1991-1994

For the past three years, selected personnel of Cardinal Hill Hospital have been collecting data and developing a net-work for services that can enable the central population of the Appalachian region, including some areas in West Virginia, Ohio, and Tennessee, to receive much needed rehabilitative care and treatment. The most strategic locations have already been identified, contacts have been made with doctors and local health service providers and arrangements have been made either for renting available space or for constructing adequate clinic space to provide the area with facilities for folow-up treatment. These facilities would be used for original evaluations and recommendations to patients. The patient, once evaluated, might come to Cardinal Hill Hospital for intensive inpatient treatment and, when the appropriate time came, would go home to receive outpatient treatment in one of the Satellite Centers being planned. This net-work would include the establishment of 8-10 satellite centers and four mobile units that would utilize both Cardinal Hill Hospital personnel and existing community resources to deliver services.

The rural satellite centers will be placed strategically throughout the Appalachian counties, enabling most of the residents to be within no more than a 30-mile radius of services.

Cardinal Hill Hospital personnel--physical, occupational, and speech therapists, physiatrists, nurses, social workers, psychologists, and vacational counselors--will be utilized to develop, train, and staff the locally based service components. These Centers will:

- identify those patients in need of rehabilitation services as soon as possible after the onset of disability, to assure timely access to comprehensive acute rehabilitation,
- evaluate the ongoing rehabilitation needs of the patient and coordinate the provision of those services through available resources by working cooperatively with the local health care providers in these clinics to increase the local knowledge base in the prevention, evaluation, and treatment of rehabilitation problems, and provide comprehensive outpatient therapeutic treatment,
- provide follow-up care for patients who have completed acute rehabilitation, focusing on the medical and educational services necessary to prevent development of secondary complications and maintaining the patient at home or in the least restrictive level of institutional care,
- coordinate the allocation of available resources to facilitate the patient's community re-integration and return to work.

V. IMPLEMENTATION

From the information secured as to the cost of building, renovation, and securing equipment, the total cost will be between $9.3 and $9.7 million. The breakdown is as follows:

Four mobile units completely equipped ($250,000 each)	$ 1,000,000
Two X-ray units installed in strategic locations ($200,000 each)	400,000
A complete computer system to tie the Centers together and to tie them in to Cardinal Hill Hospital as a central location	500,000

After funds are secured, Cardinal Hill Hospital is prepared to begin immediately to develop the following Satellite Centers:

Ashland, KY (to serve Huntington, West Virginia, Ironton, Ohio and other location in that northeastern area). This will anchor the northeastern end of the geographic area.	**$ 1,000,000**
Somerset, KY - rental and equipment. This will anchor the south central end of the geographic area.	600,000
Pikeville will serve the east central area	750,000
South Williamson, KY will serve Kentucky and the West virginia area	650,000
Appalachian Regional Hospital, Hazard, Kentucky	600,000
Kent Krum Speech clinic, Hazard, Kentucky	400,000
Corbin Baptist Hospital	500,000
Hindman (Alice Lloyd College or Hindman Settlement School)	700,000
Carl Perkins Vocational Center	700,000
Morehead	600,000
Breathitt County	800,000
	$ 9,200,000

VI. CONCLUSION

Cardinal Hill Hospital is highly regarded in the field of rehabilitation and is prepared to provide the leadership and specialized resources required to develop and implement such regional Centers for the disabled. The Hospital is uniquely suited to this task, and the Board of Trustees' commitment to this effort is reflected in the completion of the new addition to the Hospital in 1988. Cardinal Hill Hospital is requesting assistance from the Federal Government to provide an appropriation to implement these regional Centers.

The priorities that we have established for beginning the project are to secure the mobile units, the necessary X-ray equipment, and the computer system first. While this is being done, we will begin the establishment of the Ashland Satellite Center, the Somerset Center, and the South Williamson Center in Pike County. As soon as these are nearing completion, we expect to begin with the Hazard Center, the Corbin Center, and the Hindman Center. After these are completed, the remaining Centers will be established.

WEDNESDAY, APRIL 4, 1990.

CORPS OF ENGINEERS PROJECTS IN MINNESOTA

WITNESS

HON. ARLAN STANGELAND, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MINNESOTA

Mr. BEVILL. Next I see our good friend and colleague, Congressman Stangeland of Minnesota.

And Arlan, we will be glad to hear from you.

Mr. STANGELAND. Thank you, Mr. Chairman.

As in the past, I greatly appreciate the opportunity to testify today on funding Corps' projects and programs.

As Ranking Minority Member of the Public Works Committee's Water Resources Subcommittee, I have become very familiar with Corps of Engineers' project and program authorizations, as well as the critical role your subcommittee plays.

Obviously, we on the authorizing committee want to continue our partnership with you. The Nation's largest water resources development program depends on it.

Today, I would like to testify very briefly on some projects and programs of particular interest to northwest and central Minnesota. First, let me address flooding along the Red River of the North. This is an ongoing problem shared by Minnesota, North Dakota and our neighbors to the North, Canada. Flood control projects, technical assistance, and planning by the Corps have been and continue to be critically important.

This region, which is continuously subject to flood threats, would benefit from the full funding of Section 22 and Section 205. Certainly, Minnesota should get its full share of Section 22 funding.

But even more than that, Mr. Chairman, the Red River Region would benefit from funding under the Section 50, Technical Resource Service Authority which Senator Burdick and I included in the Water Resources Development Act of 1988 (P.L. 100-676).

Despite strong support from both Minnesota's and North Dakota's state water agencies, as well as others, the program did not receive funding last year or get included in the President's budget request for fiscal year 1991.

Therefore, I would ask the subcommittee to provide $500,000 (from the Corps' General Investigations Account) for the technical resource service's efforts this year.

A second item involves the Corps' cleanup of Sauk Lake, Minnesota, pursuant to Section 602 of the Water Resources Development Act of 1986 (P.L. 99-662). This is an ongoing effort to remove debris and other aquatic growth, as well as develop with other agencies a comprehensive, basinwide approach to pollution prevention and response.

This subcommittee has come through with funds over the last three years to keep plans and other pre-construction work moving, and I greatly appreciate that.

This year, I would request bill language appropriating (from the Operations and Maintenance Account, as in previous years) $20,000 for the Corps to develop a local cooperation agreement and work plan and $80,000 to acquire equipment for implementing the project.

A third item relates to streambank erosion along the Buffalo River. Erosion is an enormous problem throughout the country. In response, we need to encourage innovative, non-structural measures.

A small project along the Buffalo River, strongly supported by the Corps' St. Paul District Office and the local sponsors, would provide a good opportunity to do just that.

Therefore, I would ask the subcommittee to include $50,000 (from the General Investigations Account) for the Corps to provide technical assistance for combating streambank erosion along the Buffalo River under the authority of Section 55 of the Water Resources Development Act of 1974.

Finally, Mr. Chairman, I would ask the subcommittee to include $200,000 (from the General Investigations Account) for the reconnaissance phase of a project for flood control, water quality, and other purposes upstream of Little Falls, Minnesota. This broadly supported initiative would be pursuant to an October 1986 Survey Resolution passed by the Public Works and Transportation Committee.

Mr. Chairman, that concludes my testimony. As always, I appreciate the opportunity to appear before you and look forward to working with you on these and other water issues throughout the year.

I have a more complete statement, Mr. Chairman, I would like to submit for the record.

Mr. BEVILL. Without objection, your entire prepared statement will be made a part of the record.

Thank you very much.

Mr. STANGELAND. Thank you for your time.

[The statement of Hon. Arlan Stangeland follows:]

TESTIMONY OF HONORABLE ARLAN STANGELAND
ENERGY & WATER DEVELOPMENT APPROPRIATIONS SUBCOMMITTEE
CORPS' PROJECTS & PROGRAMS
APRIL 4, 1990

THANK YOU, MR. CHAIRMAN. AS IN THE PAST, I GREATLY APPRECIATE THE OPPORTUNITY TO TESTIFY TODAY ON FUNDING CORPS' PROJECTS AND PROGRAMS.

AS RANKING MINORITY MEMBER OF THE PUBLIC WORKS COMMITTEE'S WATER RESOURCES SUBCOMMITTEE, I'VE BECOME VERY FAMILIAR WITH CORPS OF ENGINEERS' PROJECT AND PROGRAM AUTHORIZATIONS, AS WELL AS THE CRITICAL ROLE YOUR SUBCOMMITTEE PLAYS. OBVIOUSLY, WE ON THE AUTHORIZING COMMITTEE WANT TO CONTINUE OUR PARTNERSHIP WITH YOU. THE NATION'S LARGEST WATER RESOURCES DEVELOPMENT PROGRAM DEPENDS ON IT.

TODAY, I WOULD LIKE TO TESTIFY VERY BRIEFLY ON SOME PROJECTS AND PROGRAMS OF PARTICULAR INTEREST TO NORTHWEST AND CENTRAL MINNESOTA.

FIRST, LET ME ADDRESS FLOODING ALONG THE RED RIVER OF THE NORTH. THIS IS AN ONGOING PROBLEM SHARED BY MINNESOTA, NORTH DAKOTA AND OUR NEIGHBORS TO THE NORTH, CANADA. FLOOD CONTROL PROJECTS, TECHNICAL ASSISTANCE, AND PLANNING BY THE CORPS HAVE BEEN AND CONTINUE TO BE CRITICALLY IMPORTANT. I SHARE THE CONCERNS OF THE STATES, FLOOD PLAIN MANAGERS, AND OTHERS ABOUT THE ADMINISTRATION'S RENEWED EFFORT TO IMPOSE NEW COST-SHARING REQUIREMENTS FOR SECTION 22 (PLANNING ASSISTANCE TO STATES) AND SECTION 205 (FLOOD PLAIN MANAGEMENT ASSISTANCE). THESE ARE EXTREMELY SUCCESSFUL, NEEDED PROGRAMS. IT MAY BE "PENNY-WISE AND POUND-FOOLISH" TO PLACE SIGNIFICANT OBSTACLES ON GETTING ACCESS TO SUCH VALUABLE PLANNING AND TECHNICAL SERVICES, PARTICULARLY IN ONE AREA OF MY DISTRICT -- THE RED RIVER OF THE NORTH.

THIS REGION, WHICH IS CONTINUOUSLY SUBJECT TO FLOOD THREATS, WOULD BENEFIT FROM THE FULL FUNDING OF SECTION 22 AND SECTION 205. CERTAINLY, MINNESOTA SHOULD GET ITS FULL SHARE OF SECTION 22 FUNDING. BUT EVEN MORE THAN THAT, MR. CHAIRMAN, THE RED RIVER REGION WOULD BENEFIT FROM FUNDING UNDER THE SECTION 50, TECHNICAL RESOURCE SERVICE AUTHORITY WHICH SENATOR BURDICK AND I INCLUDED IN THE WATER RESOURCES DEVELOPMENT ACT OF 1988 (P.L. 100-676). DESPITE STRONG SUPPORT FROM BOTH MINNESOTA'S AND NORTH DAKOTA'S STATE WATER AGENCIES, AS WELL AS OTHERS, THE PROGRAM DID NOT RECEIVE FUNDING LAST YEAR OR GET INCLUDED IN THE PRESIDENT'S BUDGET REQUEST FOR FY 1991. THEREFORE, I WOULD ASK THE SUBCOMMITTEE TO PROVIDE $500,000 (FROM THE CORPS' GENERAL INVESTIGATIONS ACCOUNT) FOR THE TECHNICAL RESOURCE SERVICE'S EFFORTS THIS YEAR.

A SECOND ITEM INVOLVES THE CORPS' CLEANUP OF SAUK LAKE, MINNESOTA, PURSUANT TO SECTION 602 OF THE WATER RESOURCES DEVELOPMENT ACT OF 1986 (P.L. 99-662). THIS IS AN ONGOING EFFORT TO REMOVE DEBRIS AND OTHER AQUATIC GROWTH AS WELL AS DEVELOP WITH OTHER AGENCIES A COMPREHENSIVE, BASINWIDE APPROACH TO POLLUTION PREVENTION AND RESPONSE. THIS SUBCOMMITTEE HAS COME THROUGH WITH FUNDS OVER THE LAST THREE YEARS TO KEEP PLANS AND OTHER PRE-CONSTRUCTION WORK MOVING, AND I GREATLY APPRECIATE THAT.

THIS YEAR, I WOULD REQUEST BILL LANGUAGE APPROPRIATING (FROM THE OPERATIONS AND MAINTENANCE ACCOUNT, AS IN PREVIOUS YEARS) $20,000 FOR THE CORPS TO DEVELOP A LOCAL COOPERATION AGREEMENT AND WORK PLAN AND $80,000 TO ACQUIRE EQUIPMENT FOR IMPLEMENTING THE PROJECT.

A THIRD ITEM RELATES TO STREAMBANK EROSION ALONG THE BUFFALO RIVER. EROSION IS AN ENORMOUS PROBLEM THROUGHOUT THE COUNTRY. IN RESPONSE, WE NEED TO ENCOURAGE INNOVATIVE, NONSTRUCTURAL MEASURES. A SMALL PROJECT ALONG THE BUFFALO RIVER, STRONGLY SUPPORTED BY THE CORPS' ST. PAUL DISTRICT

OFFICE AND THE LOCAL SPONSORS, WOULD PROVIDE A GOOD OPPORTUNITY TO DO JUST THAT. THEREFORE, I WOULD ASK THE SUBCOMMITTEE TO INCLUDE $50,000 (FROM THE GENERAL INVESTIGATIONS ACCOUNT) FOR THE CORPS TO PROVIDE TECHNICAL ASSISTANCE FOR COMBATING STREAMBANK EROSION ALONG THE BUFFALO RIVER UNDER THE AUTHORITY OF SECTION 55 OF THE WATER RESOURCES DEVELOPMENT ACT OF 1974.

FINALLY, MR. CHAIRMAN, I WOULD ASK THE SUBCOMMITTEE TO INCLUDE $200,000 (FROM THE GENERAL INVESTIGATIONS ACCOUNT) FOR THE RECONNAISSANCE PHASE OF A PROJECT FOR FLOOD CONTROL, WATER QUALITY, AND OTHER PURPOSES UPSTREAM OF LITTLE FALLS, MINNESOTA. THIS BROADLY-SUPPORTED INITIATIVE WOULD BE PURSUANT TO AN OCTOBER 1986 SURVEY RESOLUTION PASSED BY THE PUBLIC WORKS AND TRANSPORTATION COMMITTEE.

MR. CHAIRMAN, THAT CONCLUDES MY TESTIMONY. AS ALWAYS, I APPRECIATE THE OPPORTUNITY TO APPEAR BEFORE YOU AND LOOK FORWARD TO WORKING WITH YOU ON THESE AND OTHER WATER ISSUES THROUGHOUT THE YEAR.

WEDNESDAY, APRIL 4, 1990.

PASSAIC RIVER FLOOD CONTROL PROJECT

WITNESSES

FRANKLIN KEMP, REPRESENTATIVE, "PROTECT"

LORIE MOTTESE, COUNCILWOMAN, LINCOLN PARK, NEW JERSEY

HERMAN NADEL, COUNCILMAN, LINCOLN PARK, NEW JERSEY

ERICA SCHIFFMAN, REPRESENTATIVE, "PROTECT"/NEW JERSEY ALLIANCE FOR ACTION

JOHN TALERICO, REPRESENTATIVE, CONSULTING ENGINEERS COUNCIL OF NEW JERSEY

J.B. WILEY, JR., P.E., P.P., CHAIRMAN "PROTECT"

Mr. BEVILL. Next, Mr. J. B. Wiley.

Mr. WILEY. Mr. Chairman, may the other members of our group sit up at the table?

Mr. BEVILL. Sure. Come right up. You just want your moral support.

Mr. WILEY. I do. I need it.

Mr. BEVILL. We are glad to have each one of you, and I am sure you will want to put everybody's name in the record that is here in support of your position.

Mr. WILEY. Thank you, sir.

At the end of the table, Mr. Franklin Kemp, a representative of PROTECT. I will have a bit more to say about who PROTECT is in a moment.

Next, Erica Schiffman, who is with the New Jersey Alliance For Action, and also serves as staff person to PROTECT.

Councilwoman Lorrie Mottese, Councilwoman of the Municipality of Lincoln Park in New Jersey; Mr. John Talerico, representing the Consulting Engineers Council of New Jersey; and on my left, Councilman Herman Nadel, Councilman of the Municipality of Lincoln Park in New Jersey.

Mr. BEVILL. You obviously have a very distinguished group.

Mr. WILEY. Thank you, sir.

And my name is J.B. Wiley. I am Chairman of PROTECT, and we have submitted prepared testimony, which explains the purpose of the Passaic River Basin Flood Control Project.

But having heard Congressman Gallo explain to you very succinctly and carefully what the project is all about, we will skip over that because I am sure you do understand what it's about.

We are here to support the request of the President's budget for an appropriation for the continued work of the Corps in planning and engineering. We believe that it would be desirable for the amount which has been recommended by the Federal—by the Administration's budget of five million to be increased to a larger amount of seven-and-a-half million.

Part of the reason for that is that, as you have heard from Congressman Gallo and as has been reported by the press, Congressman Roe and Congressman Torricelli, along with our two Senators, Lautenberg and Bradley, all of these men here in Congress have joined in announcing that it's their determination that the outlet of this flood control tunnel be moved somewhat farther downstream so that it will exit in Newark Bay.

That will increase the length of the tunnel by a significant amount, roughly 50 percent increase in length. It will require additional engineering and planning by the Corps of Engineers, and that is in part, and an important part, why we would like to recommend that the appropriation be increased to seven-and-a-half million dollars.

I might say that one of the few things that Congressman Gallo did not say is that in 1903 there was a major flood, the so-called flood of record, in Passaic River Basin. Such a flood can, of course, re-occur at any time, and inevitably, such a flood will re-occur.

If it re-occurs before this project is completed, the estimate by the Corps is that the damages from that one flood eventually exceed $2 billion in current dollars. We believe that there is every reason to proceed with this project as quickly as possible, in the hope that we may be able to complete it before that future event occurs.

I might also say that having watched out the window with the rain coming down for the last several days, all of us from that area are reminded that it was exactly six years ago this week that the flood of 1984 occurred in April, and we very much hope that you will lend your support to rapidly pushing this project along so that we may achieve protection before it's too late.

If there are any question, Mr. Chairman, we will be happy to try to answer them.

Attached to our testimony is a list of the persons—of the elected officials and the organizations who support this project. I won't attempt to read them all to you.

We would be happy to answer any questions that you may have.

[The statement of J.B. Wiley, Jr. follows:]

PROTECT

Passaic River Organizations To Encourage Construction of the Tunnel

P.O. Box 6438 • Raritan Plaza II • Raritan Center • Edison NJ 08818 • 201-225-1180 • FAX 201-225-4694

TESTIMONY ON
POMPTON/PASSAIC DUAL INLET TUNNEL DIVERSION PLAN

BY

J.B. WILEY, JR., P.E., P.P.
REPRESENTING
"PROTECT"
(PASSAIC RIVER ORGANIZATIONS TO ENCOURAGE CONSTRUCTION OF THE TUNNEL)

A COMMITTEE OF THE NEW JERSEY ALLIANCE FOR ACTION

BEFORE THE

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
OF THE HOUSE COMMITTEE ON APPROPRIATIONS

U.S. HOUSE OF REPRESENTATIVES

APRIL 4, 1990

REPRESENTING ALSO:

COUNCIL OF LINCOLN PARK, NEW JERSEY
CONSULTING ENGINEERS COUNCIL OF NEW JERSEY

"PROTECT" is a committee of the New Jersey Alliance For Action, Inc.

PROTECT

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"PROTECT" (Passaic River Organizations To Encourage Construction of the Tunnel) is a committee of the New Jersey Alliance for Action. The Alliance for Action is a statewide coalition of leaders from municipal and county governments, business, academic, labor, professional and civic organizations. The Alliance for Action concerns itself with advancing those causes which improve the economy and quality of life for New Jersey's 7.8 million residents.

"PROTECT" was formed in 1988 to bring together New Jersey municipal governments, counties, public agencies, organized labor, business interests, professional and civic groups and concerned citizens united in support of the Passaic River Tunnel Plan.

There is considerable interest from both New Jersey's Senators, Bradley and Lautenberg, and Congressmen Roe, Gallo and Torricelli, in extending the Tunnel to an outlet in Newark Bay. Therefore, we support an increase to the FY '91 budget request by $2.5 million, which reflects the need to provide the full effort necessary to move the pre-construction engineering and design phase to completion.

"PROTECT" urges the Congress to appropriate $7.5 million for the continued engineering and design of the Tunnel Plan and to authorize the project so it may be constructed before the forces of nature have another opportunity to destroy property and devastate human life.

"PROTECT" is a committee of the New Jersey Alliance For Action, Inc.

Chairman Bevill and Members of the Committee:

My name is J.B. Wiley, Jr., and I represent "PROTECT" (Passaic River Organizations To Encourage Construction of the Tunnel). "PROTECT" is a committee of the New Jersey Alliance for Action. The Alliance for Action is a statewide coalition of leaders from municipal and county governments, business, academic, labor, professional and civic organizations. The Alliance for Action concerns itself with advancing those causes which improve the quality of life for New Jersey residents. The Alliance for Action's involvement in solving the flooding in the Passaic River Basin began with the inception of the Alliance some 16 years ago as a result of the severe flooding in this region.

"PROTECT" was formed in 1988 to bring together New Jersey municipal governments, counties, public agencies, organized labor, business interests, professional and civic groups and concerned citizens united in support of the Passaic River Tunnel Plan. This project will provide flood protection for more than 100 municipalities in New Jersey which lie within the Passaic River Basin.

In addition to being a Professional Engineer licensed by New Jersey, New York and three other nearby states, I am certified by the National Association of Environmental Professionals.

In prior years, I have both lived and worked within the flood hazard area of the Passaic River, and have personally experienced the devastation caused by the destructive force of flooding which takes place in the Passaic River and its tributaries. This devastation is not only responsible for extensive property damage, but even more critical, the loss of life.

The individuals and organizations which have endorsed the concept of the Tunnel Plan are attached to this testimony.

Thanks to the farsighted vision of New Jersey's Congressional delegation and the support of Congress over many years, the extensive studies of the Corps of Engineers have finally evolved a plan of protection from the serious and recurrent flooding in the Passaic River Basin. Over 150 structural and non-structural plans were studied by Federal and State officials; and the State of New Jersey selected and endorsed the Passaic River Tunnel Plan. This unique plan will drain flood waters away from the populated and the damage prone areas, divert this flood water through an underground tunnel system and meter the outlet discharge into a waterway capable of accommodating the increased flow.

The present plan will use a large underground tunnel system to resolve the flooding problem, and as a consequence, will result in a minimum of disruption to persons and properties at the surface. Previous flood control plans have encountered resistance from some residents within the basin because of the extensive surface works which would have been required. We note with considerable enthusiasm that this plan involves the acquisition and permanent preservation of more than 5,000 acres of wetlands in the upper Passaic Basin. Acquisition, and thus permanent protection, is enthusiastically endorsed by virtually all local interests.

While a few individuals have expressed the view that a better plan would be to purchase the properties which are affected by flooding, evict the residents, and destroy their homes, our examination of this proposal shows it to be entirely impractical. Aside from the human dimension of evicting people and destroying their homes, the simple fact is that to clear out all of the properties impacted by the storm flood levels would involve the relocation of approximately 15,000 residents and another 2,000 buildings at a cost of over 4 billion dollars. That is about four times the estimated cost of the recommended Tunnel Plan. In addition, the entire cost of this alternative would have to be paid by the State of New Jersey.

The destructive flood of April 1984 made it necessary for over 9,000 homes to be evacuated, and resulted in 4 deaths. One fireman died attempting to rescue a family from their home. The damages which resulted from the flood in 1984 amounted to approximately $370 million. A repetition of the record flood of 1903, which can of course occur again at anytime, would result in damages estimated at nearly 2 billion dollars.

We also note that after careful study, former Governor Kean and the New Jersey Department of Environmental Protection have expressed support for the Dual Inlet Tunnel Plan, and the State has agreed to be the non-Federal sponsor of the Project.

In addition, there is considerable interest in extending the Tunnel to an outlet in Newark Bay. Both of New Jersey's Senators, Bill Bradley and Frank Lautenberg, as well as Congressmen Roe, Gallo and Torricelli are in support of the Tunnel Plan with the extension of the outlet to Newark Bay.

While we support and appreciate the 5 million dollars in the President's FY '91 budget, we wish to bring to your attention that this is a major project and as such, the Passaic River Main Stem feasibility report has recommended the preparation of a pre-construction engineering and design study for this flood control plan.

"PROTECT" will support the Tunnel Plan as it is proposed currently, or with an extension to Newark Bay. Therefore, we support an increase to the FY '91 budget request by 2.5 million dollars, which reflects the need to provide the full effort necessary to move the pre-construction engineering and design phase to completion, in light of these considerations and the need for Passaic River Basin flood control.

We urge the Congress to appropriate 7.5 million dollars for the continued engineering and design of the Tunnel Plan and to authorize the project so it may be constructed before the forces of nature have another opportunity to destroy property and devastate human life.

On behalf of "PROTECT", I would like to thank you for the opportunity to present our position to you, Mr. Chairman and the Members of your Subcommittee.

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TUNNEL PLAN ENDORSEMENTS

The Pompton/Passaic Dual Inlet Tunnel Plan has received numerous endorsements, including:

The Honorable Dean Gallo, United States House of Representatives
The Honorable Robert Roe, United States House of Representatives
The Honorable Leanna Brown, New Jersey State Senate, 26th District
The Honorable Joseph Bubba, New Jersey State Senate, 34th District
The Honorable Alex DeCroce, New Jersey State General Assembly, 26th District
The Honorable Robert J. Martin, New Jersey State General Assembly, 26th District
New Jersey Department of Environmental Protection
New Jersey Society of Professional Engineers
Association of Mechanical Engineers-NJ
Consulting Engineers Council-NJ
New Jersey Society of Municipal Engineers
American Society of Civil Engineers-NJ Section
Morris County Board of Chosen Freeholders
Passaic County Board of Chosen Freeholders
Borough of Butler
Borough of Fair Lawn
Borough of Florham Park
Borough of Lincoln Park
Borough of Pompton Lakes
Borough of West Paterson
City of Paterson
East Hanover Township
Fairfield Township
Pequannock Township
Township of Little Falls
Township of Montville
Wayne Township
Mayor's Flood Advisory Committee of Pompton Lakes
Morris & Sussex Counties Building Trades Council
Regional Water Management Board
Bergen County Building Trades Association
Natural Resources Citizen Advisory Committee
Heavy & General Construction Laborers Local #472
Building Contractors Association-NJ
Flood Residents Coalition
Iron Workers Local Union #483
National Electrical Contractors Association
New Jersey Asphalt Pavement Association
Association for Bridge Construction and Design
Construction & General Laborers Local Union #172
New Jersey Builders Association
Associated General Contractors Association-NJ
Utility and Transportation Contractors Association-NJ
New Jersey Industrial Development Association
Electricians Local Union #102 I.B.E.W.
Passaic County Building Trades Council
Operating Engineers Local Union #825
New Jersey Alliance for Action

"PROTECT" is a committee of the New Jersey Alliance For Action, Inc.

Borough of Lincoln Park

MUNICIPAL BUILDING • 34 Chapel Hill Road • Lincoln Park, N.J. 07035

General Offices	Health Dept	Parks & Recreation	Planning & Building	Police Dept	Water & Sewer
(201) 694-6100	694-6306	694-1146	694-6818	694-5533	694-6104

April 4, 1990

House Committee on Public Works & Transportation
Sub-Committee on Water Resources
House Office Building
Washington, D.C. 20515

RE: Public Notice
Main Stem Passaic River Project
(Dual Inlet Tunnel Diversion Plan)

Dear Mr. Chairman:

The Governing Body and the residents of the Borough of Lincoln Park wish to express their support for the above referenced project by submitting to you copies of 1089 post cards in favor of the Main Stem Passaic River Project.

Please be reminded that approximately sixty percent (60%) of this community of 13,000 people was inundated by flood waters as a result of the 1984 flood. The Borough was declared a national disaster area and federal funds were made available to assist in recovery.

Every year the residents of this community face similar threats to life, limb and property due to the lack of a basin-wide system to control storm water run-off.

The Main Stem Passaic River Project will provide the residents of this community, and all residents within the Central Passaic Basin, the Storm Water Management System ("Safety-Net") that this area needs and must have in order to save lives and reduce/eliminate yearly damage to their homes and property, once and for all!

Therefore, please accept this letter and the attached copies of post cards as positive support for this long over-due and much needed project.

Thank you for your cooperation.

Sincerely yours,

BOROUGH OF LINCOLN PARK

Sanford A. Kaplan

Sanford A. Kaplan
Administrator

SAK/bjs

[CLERK'S NOTE.—The copies of post cards included with the statement of the Borough of Lincoln Park will be retained in committee files.]

Mr. BEVILL. Well, I have no questions, and we appreciate your very fine testimony. And, of course, your complete prepared statement will be made a part of the record.

So thank you very much.

Mr. WILEY. Thank you, sir.

WEDNESDAY, APRIL 4, 1990.

LOCK HAVEN FLOOD PROTECTION PROJECT, PENNSYLVANIA

WITNESS

LYNN VANNUCCI, PRESIDENT, WEST BRANCH VALLEY FLOOD PROTECTION ASSOCIATION

Mr. BEVILL. Next on the schedule we have Mr. Edward Lee Rogers.

Ms. VANNUCCI. I am not Mr. Lee Rogers; my name is Lynn Vannucci, President of Flood Protection Association. Unfortunately our attorney, Mr. Rogers, cannot be here.

Mr. BEVILL. Well, we will be glad to hear from you, and we are sorry that Mr. Rogers couldn't be here. His statement will be in the record, and if you wish you may just summarize.

Ms. VANNUCCI. Thank you for letting us appear here today.

The West Branch Valley Flood Protection Association is a bipartisan, county-wide (Clinton County) organization with over 1,000 members, and many more thousands of county voters who support the Association's position. Two to one, the Association is committed to preventing the construction of the proposed Lock Haven Flood Protection project.

The project, which is estimated to cost $87 million, has highly adverse economic, social, and environmental impacts, and an actual cost-benefit ratio of substantially less than unity.

The local sponsor lacks financial capability and legal authority to carry its local share of the project cost, and the Commonwealth of Pennsylvania will not make up the shortfall.

The Lock Haven Flood Protection Authority, the local sponsor of the project, has neither the requisite legal authority nor the financial capability necessary to act as local sponsor in accord with criteria established under Federal law and the Corps' rules governing local cost-sharing requirements, and these inadequacies are not likely to be remedied.

As we pointed out in earlier correspondence, in its letter of June 27, 1989, the Corps expressed concern that under the "legal relationships" creating the Authority as the local sponsor, it "is completely dependent upon the Commonwealth of Pennsylvania, City of Lock Haven, and Woodward Township to perform the Authority's responsibilities and obligations under the LCA."

The local cost-sharing responsibility of the City of Lock Haven is in excess of $22 million, which the city has attempted to obtain from the Commonwealth, inasmuch as the city is on record that it cannot afford to pay its non-federal share of the cost of the project.

Under Pennsylvania law and regulations, the Commonwealth of Pennsylvania may compensate a local authority sponsoring agency in flood control projects up to 50 percent of the cost of the project.

The City of Lock Haven requested through the Department of Environmental Resources that the Commonwealth of Pennsylvania provide $16.6 million towards the Lock Haven Local Flood Protection Project. The Commonwealth of Pennsylvania has reiterated its commitment as of January 31, 1990, to only 50 percent of the non-Federal share, or $11.1 million.

Arthur A. David, Secretary, Department of Environmental Resources, points out in his letter that "prior to the passage of the Federal Water Resources Development Act of 1986, our policy was to pay 50 percent of only the costs incurred by sponsoring municipalities in carrying out their land acquisition and relocation responsibilities."

This strongly indicates that the Commonwealth of Pennsylvania will not increase its commitment beyond the 50 percent non-Federal share.

In May, 1988, the City Council of Lock Haven agreed to limit the city's overall commitment to the project to not more than $1.5 million. The City Council of Lock Haven continues its commitment for not more than $1.5 million, reaffirming this position at its Council meeting of February 5, 1990.

Moreover, the City is unable to identify any means which would allow it to increase its share of the funding. It has promised that taxes will not be raised to provide funding for the project, but after exhausting all other options, the City is now admitting that it most likely would have to double local taxes to pay for the project.

As we reported in our testimony last year, the City is unable now to maintain its existing infrastructure without substantial aid from the outside. Doubling of taxes to the residents of Lock Haven would be a burden they cannot carry.

The facts are that the City of Lock Haven and Woodward Township are still unwilling to sign the LCA as guarantors of the Authority's overall obligations as local sponsor again this year.

As pointed out in our comments submitted to your subcommittee last spring, the local cost-sharing responsibility is in excess of $18 million. Despite the fact that $7.6 million in funds were appropriated by your committee last year toward this new water project, and despite the City's continual requests, the Commonwealth has reiterated the fact that it will not fund more than 50 percent of the non-Federal share of the costs.

The City is still unable to commit more than approximately a $1.5 million. Woodward Township continues to go on record as not willing to contribute any funding to the construction of the project because it will suffer additional flooding induced by the project.

Likewise, despite at least four requests, as of December 15, 1989, the Pennsylvania Infrastructure Investment Authority (PENNVEST) is still denying Lock Haven's request for $1.5 million loan to relocate major sewer trunk lines along the riverbank.

We noted last year that the Corps points out the Lock Haven project is the first project proposed since enactment of the cost-sharing rules in the Water Resources Development Act of 1986 that involves the potential for hazardous substances on lands needed for project purposes.

The question of liability under Federal environment hazardous substance statutes, including industrial liability under the Comprehensive Environmental Response, Compensation Liability Act for response and cleanup costs still remains unanswered.

To reiterate, they state that potentially responsible persons who may be jointly and severally liable under CERCLA include "the current owner of the property when hazardous substances are found . . . we believe that the Authority may qualify as the 'current owner' within the meaning of CERCLA for project lands it acquires."

There is still no assurance either that existing owners will be willing to undertake the cleanup necessary or that the Authority will have the financial capability to undertake the unquantified and potentially enormous liabilities under CERCLA that may be involved.

Also, the Authority has not demonstrated the capability to fund the necessary environmental audits. Still of concern is the toxic and hazardous contamination at the Drake Chemical Site on the south side of the proposed levee.

This year as last year, even if the Authority did not face the problems described above, the Association remains adamantly opposed to this project because of the highly deleterious impacts it would have on the City of Lock Haven, particularly its Historic District, and on the surrounding county, as pointed out in our earlier comments.

To destroy the relationship between the City's Historic District and the river would be to destroy the basic aesthetic and cultural, as well as historic, qualities that give the City its essential identity.

We continue to note that the Corps' Environmental Assessment largely ignores the fundamental issues of the integrity of the Historical District. Its proposed landscaping of the wall still fails to address these larger issues.

As we noted, the Corps' Draft Memorandum Agreement for Cultural Resources focuses overwhelmingly on the small collection of individual structures which do, in deed, deserve to be preserved. Additionally, however, we have learned that it has provided no review of a significant lock from the Balk Eagle Navigation which would be destroyed by the proposed construction.

In many ways, with the Corps continues to fail to focus on, however, is of even greater importance. That, as we also noted last year, is the overall impact of the wall on the City and its Historic District, particularly its disruption of the City's relationship to the river and the historic, aesthetic and recreational significance of that relationship.

The flood of 1972 from Hurricane Agnes is reputed to have been the worst material flood in the history of the U.S. Damages and loss of life were significantly higher in the City of Wilkes-Barre than other areas. Levees had been built in the town at a level higher than any historic flood level, but the 1972 flood overtopped them by at least three feet.

Studies conducted after the flood concluded that the loss in Wilkes-Barre was significantly increased because of two factors. First, because some residents ignored evacuation warnings and refused to leave their properties, trusting in the effective functioning of the levees. Second was the increased use of the flood plain brought on by this false sense of security.

The City of Lock Haven is relying on the levees as a total solution to their flooding problem, not as merely a potential part of a complex system for flood protection. They are not working to provide curbs against further encroachment of flood-vulnerable construction in the lower parts of the flood plain. In fact, they are already working to place a manufacturing facility in a complex at the lower end of the project which has been subjected to flooding in the past.

the potential new owner is relying on the levee as a guarantee against flooding in the future. The recommendations coming from those who have reviewed mistakes of the past are that effective land-use management and zoning are integral parts of providing for economical flood protection, along with well-developed warnings and evacuation plans and upstream/downstream improvements.

The actions in Lock Haven to open up unsafe areas for development as a result of the levee construction would indicate that they falsely believe their problems will be solved and are not focusing on the need for a regional solution which would assist communities upstream and downstream from them.

As we noted last year, the Staff of the Susquehanna River Basic Commission is concerned that, "implementation of the local protection project for Lock Haven will considerably reduce and may fully preclude any future opportunity to economically justify regionally significant, upstream flood water detention measures . . . Piecemeal community-by-community flood protection solutions may well exceed the time and cost of a carefully considered regional solution or combination of structural and non-structural measures."

We refer you once again to the issue of increased flooding and adverse impacts already recognized as a result of this project in important neighboring communities along the West Branch of the Susquehanna and its tributaries.

The Association respectfully urges that no appropriations be allocated for this highly detrimental, uneconomic and unnecessary levee project.

Mr. Bevill. All right. Your time is up. Can you wrap it up in about 10 seconds?

Ms. Vannucci. We are asking that the project not be funded this year, particularly in light of the fact that it was funded last year and those funds were not spent because the local cooperation agreement was not signed.

Mr. Bevill. Thank you very much for a very fine statement, and we will certainly consider the entire amount.

[The statement of the West Branch Valley Flood Protection Association follows:]

Statement of West Branch Valley Flood Protection Association, Lock Haven, Pennsylvania, before the Subcommittee on Energy and Water Development, Committee on Appropriations, House of Representatives, Congress of the United States

April 4, 1990

I. Introduction and Summary.

The West Branch Valley Flood Protection Association is a bipartisan, county-wide (Clinton County, pop. 38,000) organization with over 1,000 members, including many residents of the City of Lock Haven, which has many more thousands of County voters who support the Association's position that the proposed Lock Haven Flood Protection project (hereinafter "project" or "dike/levee") should not be constructed. In 1987, the project was rejected by a margin of two to one in a county-wide non-binding referendum. The Commonwealth of Pennsylvania will not fund more than 50 percent ($11.1 million) of the non-federal share of project costs ($22.14 million), despite the request by the City of Lock Haven for $16.6 million. The community cannot afford the project, and cannot use any federal funds that might be appropriated. Furthermore, if constructed, the project, which is estimated to cost $87 million dollars (1989 figures), would have highly adverse economic, social, and environmental impacts, and an actual cost-benefit ratio of substantially less than unity. It should not be funded.

II. The Local Sponsor Lacks the Financial Capability to Carry its Local Share of the Project Cost, and the Commonwealth of Pennsylvania Will Not Make Up the Shortfall.

The Lock Haven Flood Protection Authority ("Authority"), the local sponsor of the project, does not have the financial capability necessary to act as local sponsor in accord with criteria established under federal law and the Corps' rules governing local cost-sharing requirements. In June, 1989, the Corps expressed concern that under the "legal relationships" creating the Authority as the local sponsor, it "is completely dependent upon the Commonwealth of Pennsylvania, City of Lock Haven, and Woodward Township to perform the Authority's responsibilities and obligations under the [proposed] LCA [Local Cooperation Agreement]." (Corps' letter of June 27, 1989, at 1, to Robert C. Yowell, Executive Director of the Authority.). (See the Association's Supplemental Statement to this Committee dated August 1, 1989, at 1.)

Under Sections 103(a) and (b) of the Water Resources Development Act of 1986, Public Law 99-662, the local ("non-federal") cost-sharing responsibility of the City of Lock Haven is 25 per cent of the total costs of the project assigned to flood control. That comes to more than $22 million, and the city is on record that it cannot afford it. Accordingly, the city has attempted to obtain $16.6 million of that cost from the

Commonwealth.

In response to the city's request, the Commonwealth of Pennsylvania has recently reiterated its commitment to contribute 50 percent, or $11.1 million, as its share of the non-federal costs of the project. (See letter dated January 31, 1990, from Arthur A. Davis, Secretary, Pennsylvania Department of Environmental Resources, to Diann H. Stuempfle, Mayor of Lock Haven.) Under Pennsylvania law and regulations, the Commonwealth may compensate a local sponsor of Federal flood control projects up to fifty percent of the non-Federal share of the project. (See Association's Statement to this Committee, April 12, 1989). In his letter, Secretary Davis pointed out that by continuing its policy of "contributing 50 percent of the non-Federal share of the total project costs," the Commonwealth has increased its funding over past practices: "Prior to the passage of the Federal Water Resources Development Act of 1986, our policy was to pay 50 percent of only the costs incurred by sponsoring municipalities in carrying out their land acquisition and relocation responsibilities." Therefore, the Commonwealth of Pennsylvania will not increase its commitment beyond the $11.1 million as it would set an unwanted precedent for increases in funding of future water projects around the state. Id.; see also, Dike Project Dead in the Water ?, Lock Haven, State not Budging on Money Issue," Williamsport Sun-Gazette, Tuesday, March 6, 1990, at 1, cols. 1, 4.

Despite the $11.1 million allocation from the Commonwealth of Pennsylvania and the $7.6 million in funds appropriated in federal funds last year for this project, the City of Lock Haven and Woodward Township are still unwilling to sign the LCA as guarantors of the Authority's overall obligations as local sponsor. Woodward Township continues to go on record as not willing to contribute any funding to the construction of the project because it will suffer additional flooding induced by the project. Likewise, the Pennsylvania Infrastructure Investment Authority (PENNVEST) has consistently denied Lock Haven's repeated requests for a $1.5 million loan to relocate major sewer trunk lines along the riverbank. (See letter dated December 15, 1989, from Paul K. Marchetti, Executive Director, PENNVEST, to City of Lock Haven.)

In May, 1988, the City Council of Lock Haven agreed to limit the city's overall commitment to the project to not more than $1.5 million, which limit was confirmed at its meeting of February 5, 1990. (See, Lock Haven Council will pursue flood plan funds, Lock Haven Express, Feb. 6, 1990, at 1.) The Mayor was reported to have stated that "city residents could not afford to pay more for the project through higher taxes and the city would stick to its $1.5 million funding cap." (Id.) The current real estate tax rate is 9 mills; the $1.5 million commitment plus an additional $3.3 million from the city would require the rate to be raised by approximately 8 mills, or nearly doubled. Lock Haven Asked to 'Dig Deep' to Fund Hard-Fought Dike System, Williamsport Sun-Gazette, March 22, 1990, at 39.

The city has now requested donations through newspaper advertisements and has sought pledges of support from owners of tax-exempt properties to raise the $3.3 million necessary to continue the project. Robert Yowell, Executive Director of the Authority, has acknowledged, however, that "the amount people pledge to donate would not cut the amount their taxes would increase; the donation is over and above the tax increase that would be necessary to pay for the project." (See, City scraps deadline for flood project, Lock Haven Express, March 27, 1990, at 1.)

Doubling of taxes of residents of Lock Haven would be a burden that most of us cannot and do not wish to carry. Even now the City is unable to maintain its existing infrastructure without substantial aid from the outside. (See Statement, April 12, 1989).

The city taxpayers, including members of this Association, will be exposed to further substantial economic burdens if the project goes forward. As the LCA points out, the "(t)otal project costs are presently estimated to be $86,400,000. . . . Such cost estimates are subject to adjustments based upon cost actually incurred and are not to be construed as the total financial responsibilities of the Government and the Local Sponsor." (Proposed LCA at unnumbered 11-12, ARTICLE VII, par. a.) The LCA states that Sec. 902 of P.L. 99-662 "establishes a maximum construction cost for the Project. . . the Section 902 cost limit is $98,640,000 . . . . This amount shall be adjusted to allow for appropriate increases for inflation and changes in the project cost as provided . . . ." (Id. at last page, ARTICLE XX.)

The City of Lock Haven cannot guarantee its performance in the event of future cost increases. The LCA states that "[i]f at any time during the period of construction the Government determines that additional funds will be needed from the Local Sponsor, the Government shall so notify the Local Sponsor, and the Local Sponsor, no later than 45 calendar days from receipt of such notice, shall make the necessary funds available . . . ." (Id. at 12, ARTICLE VII, par. b.4.) Further, the LCA provides that upon completion of the project, the Government will make a final accounting of the total project costs. "In the event the total contribution by the Local Sponsor is less than its minimum required share of total project costs, the Local Sponsor shall, no later than 90 calendar days [after receipt of notice] . . . make a cash payment to the Government of whatever sum is required to meet its minimum required share of total project costs." (Id. at 13, ARTICLE VII, par. e.)

In short, the $4.8 million commitment required of the City currently, which it cannot fulfill, is not a hard figure. Instead, we are being asked to commit ourselves to paying up to 12.5 percent of a project that will probably cost far more than its currently estimated $87 million. Given the extremely limited resources available to us, and the grave hardships to many that would result, our community cannot responsibly make such a commitment.

III. The Local Sponsor is Not Prepared to Meet its Other Commitments under the LCA, and the Resulting Economic Costs and Risks of the Project Justify its Non-Funding.

The Local Sponsor also agrees to "operate, maintain, repair, replace, and rehabilitate the completed Project . . . ." (LCA at 14, ARTICLE IX, par. a.) The commitment to a levee is long-term, and as the project ages, costs for maintenance will rise. The City of Lock Haven is over-extending the ability of its residents to pay for just the construction of the project. The costs for maintenance, including eventual rehabilitation, can be enormous, and the City of Lock Haven cannot carry such a burden.

The Lock Haven project involves the potential for hazardous substances on lands needed for project purposes. Still of concern is the toxic and hazardous contamination at the Drake Chemical Site on the South side of the proposed levee. See Environmental Assessment at EA-10. There is still no assurance either that existing owners will be willing to undertake the cleanup necessary or that the Authority will have the financial capability to undertake the unquantified and potentially enormous liabilities under CERCLA that may be involved. (See Supplemental Statement, August 1, 1989.) Also, the Authority has not demonstrated the capability to fund the necessary environmental audits.

Under the LCA, the Local Sponsor "shall provide .. information to zoning and other regulatory agencies for their guidance and leadership in preventing unwise future development in the floodplain and in adopting such regulations as may be necessary to prevent unwise future development and to ensure compatibility with protection levels provided by the Project." (LCA at 6, ARTICLE 11, par. 1.) The city, however, is working in the opposite direction. It is attempting to place a manufacturing facility in a complex at the lower end of the project which has been subjected to flooding in the past. The potential new owner is relying on the levee as a guarantee against flooding in the future. See, Lock Haven Council will pursue flood plan funds, Lock Haven Express, Feb. 6, 1990, at 1, 3; State Given an Ultimatum on Lock Haven Dike Project, Williamsport Sun-Gazette, Feb. 6, 1990, at 1. Such reliance should be discouraged. The disastrous failure of the old levee in Elba, Alabama, last month, "reflected just how vulnerable development in designated flood zones . . . considered safe because of man-made barriers, can be. The problem concerns not only those living in such places . . . but also government bodies, which can face enormous expenses for rebuilding and maintenance." (See, Applebome, Flood Control Project Becomes an Infrastructure Problem," N.Y. Times, March 25, 1990.)

Studies of the flood of 1972 (Hurricane Agnes) in Wilkes-Barre indicate that a primary reason for that city's costly material damages was the increased use of the floodplain brought on by a false sense of security due to the construction of levees there. Professional recommendations based on past disasters are that effective land-use management and zoning are integral parts of providing for economical flood protection, along with well-developed amd fully funded warning systems and evacuation plans. The City of Lock Haven has shown no commitment to such an approach.

The LCA also provides that the "Local Sponsor agrees to participate in and comply with applicable Federal flood plain management and flood insurance programs." (LCA at 6, ARTICLE 11, par. j.) The National Flood Insurance Program is intended to require Federal flood insurance for the most vulnerable property owners in return for local government policies regulating development in flood-prone areas. A 1987 study by the Federal Emergency Management Agency, however, found that only about 14 per cent of residences in flood-hazard zones have flood insurance. This danger is inherent in Lock Haven as the City burdens its residents with a doubling of taxes to build the structure. Thus, a local insurance agent states that "In five years when the project is built, we can drop our flood insurance" as an incentive to residents to gain their support for the levee. (Houser, Protection is worth it, The Express, March 13, 1990 at 4.)

The project is unnecessary to attract new industry to the area. There are two nearby essentially vacant industrial parks. The Piper Corporation is returning. It does not request that the levee be built and does not want the higher taxes that would be imposed to pay for the project.

The actions of Lock Haven officials and other proponents of the project to encourage the use of unsafe areas for development would indicate that they are mistakenly relying on the levees as a total solution to their flooding problem, instead of focusing on the need for appropriate regional planning. Realistically, there is no economically feasible means of providing full and assured flood protection for Lock Haven and similarly situated river communities. Instead, what is required is a regional approach encouraging appropriate flood plain management and zoning, flood proofing, an adequate flood warning system, and flood insurance. The Associaton urges this alternative approach.

IV. Adverse Historical and Cultural Impacts.

The project would also have highly deleterious impacts on the City of Lock Haven, particularly its Historic District, and on the surrounding county, as pointed out in our earlier comments. To destroy the relationship between the City's Historic District and the river would be to destroy the basic aesthetic and cultural, as well as historic, qualities that give the City its essential identity. (See the Association's Supplemental Statement, August 1, 1989).

Conclusion

For the reasons stated above and in our earlier statements, the Association requests the no federal funds be appropriated.

Piper North Inc.
William T. Piper Memorial Airport
345 Proctor Street P.O. Box 689
Lock Haven, Pennsylvania 17745

April 3, 1990

Lynn Vannucci
West Branch Valley Flood Protection Association
Lock Haven, PA 17745

Dear Ms. Vannucci:

The purpose of this letter is to summarize Piper North, Inc.'s position regarding the Lock Haven area dike-levee. There are three aspects of the proposed project that continue to concern us. First, as stated repeatedly, we can not afford any increased taxes that might result from such a project. Secondly, the planned earthen levee at east end of the runway may present a safety hazard, especially in an emergency situation. Third, we have stated continually that we can not stand any interruption of flight operations during construction.

We would certainly support some sort of flood protection that would avoid these concerns and provide protection for our facility.

Sincerely,
Piper North Inc.

John R. Piper

John R. Piper
President

CC Robert Yowell
Executive Director
Lock Haven Area Flood Protection Authority

WEDNESDAY, APRIL 4, 1990.

IOWA PROJECTS

WITNESS

HON. JIM LIGHTFOOT, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF IOWA

Mr. **BEVILL**. Our friend and colleague, Congressman Jim Lightfoot, is here. We also need to go and vote.

Jim, I think if you want to, we will go ahead and do it now.

Mr. **LIGHTFOOT**. It's up to you.

Mr. **BEVILL**. Can you give your statement in two minutes?

Mr. **LIGHTFOOT**. I will put it in 30 seconds.

Mr. **BEVILL**. All right.

I know you are a busy man. You need to be doing other things, so you go right ahead. We will put your entire statement in the record.

Mr. **LIGHTFOOT**. Thank you. I appreciate that.

Quickly to summarize, as you are aware then, in the Water Resources Development Act of 1986, we authorized about $51.9 million for mitigation along the Missouri River. A number of states, my state in particular, Iowa, have called in support of this whole project. I would appreciate the committee appropriating the full $429,000 requested by the President to be used the acquistion of land and real estate needed for Missiouri River Mitigation Project.

That is the quick sales pitch, Mr. Chairman.

[The statement of Jim Lightfoot follows:]

STATEMENT BY THE HONORABLE JIM LIGHTFOOT
BEFORE THE HOUSE APPROPRIATIONS SUBCOMMITTEE ON ENERGY AND WATER

APRIL 4, 1990

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE, THE STATE OF IOWA DEPENDS GREATLY ON ITS RIVER RESOURCES. IN MY PART OF THE STATE WE DEPEND ON THE MISSOURI RIVER. I HAVE ASKED TO TESTIFY BEFORE YOU TODAY TO REITERATE MY SUPPORT FOR CONTINUE FEDERAL FUNDING TO MAINTAIN THE WILDLIFE AND RECREATIONAL VALUES WHICH ARE AN IMPORTANT PART OF THE MISSOURI RIVER. FOR OVER A DECADE, THE STATE OF IOWA HAS BEEN SEEKING AUTHORIZATION AND FUNDING FOR THE MITIGATION OF FISH AND WILDLIFE HABITAT LOSSES WHICH OCCURRED ALONG THE MISSOURI RIVERS. THIS PROJECT IS ALSO CONSISTENT WITH NATIONAL ENVIRONMENTAL AND RESOURCE PRIORITIES.

OVER THE YEARS, CONSTRUCTION OF DAMS AND LEVEES HAS OCCURRED ON THE MISSOURI RIVER TO CONTROL FLOODS, SUPPORT NAVIGATION, AND PROVIDE WATER FOR HYDROPOWER GENERATION, IRRIGATION AND OTHER PURPOSES. AT THE SAME TIME THESE ACTIVITIES HAVE DEVASTATED THE RIVERINE HABITAT.

DURING THE COURSE OF YOUR DEBATE OVER THE BUDGET FOR THE CORPS OF ENGINEERS THERE WILL BE MANY ELEMENTS TO CONSIDER. YOU WILL RECALL, PUBLIC LAW 99-662, THE WATER RESOURCES DEVELOPMENT ACT OF 1986, AUTHORIZED $51.9 MILLION FOR

MISSOURI RIVER MITIGATION. I APPRECIATED PRESIDENT BUSH'S INCLUSION OF LANGUAGE IN THE FISCAL YEAR 1991 BUDGET REQUESTING $429,000 IN FUNDING TO BE USED FOR DESIGN PURPOSES AND TO STUDY THE MISSOURI RIVER FISH AND WILDLIFE MITIGATION PROJECT. ALTHOUGH I APPRECIATE THE PRESIDENT'S INCLUSION OF AUTHORIZING LANGUAGE, I WOULD PREFER THE FUNDING BE USED TO INITIATE LAND ACQUISITION OF REAL ESTATE REQUIRED FOR THE PROJECT.

AS YOU KNOW, THE ARMY CORPS OF ENGINEERS HAS BEEN VERY COOPERATIVE IN MANAGING THE VARIOUS PROJECT ON THE MISSISSIPPI. I HOPE THAT THE SAME TYPE OF COOPERATIVE RELATIONSHIP CAN BE CONTINUED FOR THE MISSOURI RIVER. I FEEL CONFIDENT THAT WITH ADEQUATE FUNDING, THE CORPS COULD IMPLEMENT THE CONSTRUCTION PHASE OF THIS PROJECT IN A TIMELY FASHION. IT IS MY HOPE THE ARMY CORPS OF ENGINEERS WILL CONTINUE TO VIEW THE MISSOURI RIVER MITIGATION PROJECT AS A TOP PRIORITY AND MOVE FORWARD ON THIS PROJECT BY USING THE FUNDS AS THEY WERE INTENDED. I ALSO URGE THE SUBCOMMITTEE ON ENERGY AND WATER APPROPRIATIONS TO KEEP IN MIND THE PRESIDENT'S INCLUSION OF FUNDING LEVELS FOR THIS PROJECT WHEN DETERMINING THE APPROPRIATION LEVELS FOR THE CORPS. LET ME ALSO POINT OUT, THIS WORTHWHILE PROJECT HAS THE SUPPORT OF THE GOVERNORS OF THE STATES OF IOWA, NEBRASKA, MISSOURI, AND KANSAS. JUDGING BY THE AMOUNT OF LETTERS RECEIVED IN MY CONGRESSIONAL OFFICE, PUBLIC SUPPORT HAS BEEN OVERWHELMING FOR THIS PROJECT. FINALLY, I OFFER MY ASSISTANCE IN

ADVANCING THE ACQUISITION, RESTORATION, AND REHABILITATION OF HABITAT ASSOCIATED WITH THE RIVER.

THANK YOU AGAIN MR. CHAIRMAN FOR GIVING ME THE OPPORTUNITY TO PRESENT MY VIEWS BEFORE THE SUBCOMMITTEE. I WOULD BE HAPPY TO ANSWER ANY QUESTIONS YOU MAY HAVE.

Mr. **Bevill**. We will certainly work with you on it and do the best we can.

Mr. **Lightfoot**. I know you will, sir.

Mr. **Bevill**. We will stand in recess here for about 10 minutes. [Recess.]

Wednesday, April 4, 1990.

WATER RESOURCES PROGRAMS

WITNESS

EDWARD R. OSANN, DIRECTOR, WATER RESOURCES PROGRAM, NATIONAL WILDLIFE FEDERATION

Mr. **Bevill**. The committee will come to order. Mr. Osann, we will be pleased to hear from you.

Mr. **Osann**. Thank you, Mr. Chairman.

I appreciate the opportunity to testify today. We have a prepared statement. I won't attempt to read it, but will merely hit the high spots.

Mr. **Bevill**. Your entire statement will be made a part of the record.

Mr. **Osann**. Thank you, Mr. Chairman.

Thinking back over the years and some of the problems and opportunities that we faced in the water resources development program and legislative process over the years, I think it is expeditiously rewarding to consider the progress that has been made in this area.

With the 20th anniversary of Earth Day coming up, I think it is worth noting that this legislation, with the right kind of guidance from this subcommittee is a very important manifestation of the country's concern for the environment. There are a number of initiatives in the Administration's budget in this area that we strongly support.

We are delighted to see for instance the support for mitigation for the Corps of Engineers program and finally the Administration budgeting, the Tennessee Tombigbee Waterway Mitigation Plan which I know you have been a supporter of for a good many years. We are delighted to see the Corps take its responsibilities for mitigation in the Yazoo Basin and there is money in the budget for that. We strongly support the reformulation of the Yazoo Basin project which the Administration has requested funding for. I think the thing to keep in mind with regard to the Yazoo Basin reformulation is that we are confident that through this exercise the Corps can develop a better project.

This is not an effort to kill this important project, but to come up with a better one—one that better serves the current needs of people in the area and protects the wildlife resources that are so important in the lower Mississippi Valley.

So we are strongly supporting the request that the Corps has made which is in line with the views of the State of Mississippi.

I would like to call the committee's attention to the matter relating to the Richard B. Russell Dam in Georgia and South Carolina. This project is under court order from the U.S. Court of Appeals preventing the operation and testing of the reversible pump storage power units at the project until a satisfactory plan is presented to the Crops that can protect the fishery resources that is there at that site.

The Corps has known that this was going to have to be done since the middle of 1988 when the Federal District Court first acted on this subject. Yet they have come back year after year requesting money for both the purchase and installation of the turbines and now for the dredging of the tailrace. We want to call this situation to the committee's attention.

I believe they requested about $19 million this year. It is quite possible that this money, while it may be spent, that these facilities may not be operable and may not be operable for some considerable period of time if the difficulties in designing the fishery mitigation facilities or operating plant or whatever it is going to be become especially difficult.

We are concerned that the Corps has proceeded ahead with all the fiscal features and has asked for and expended all the funds for these features in the absence of a plan that is now required by the court before these facilities can even be tested. So we wanted to call that situation to the attention of the subcommittee and urge your consideration of that issue.

One other point to make on the Corps budget is, we would recommend a modest amount of funding to provide funding for a study that was authorized by the Water Resources Development Act in 1986 relating to sea level rise. Now we have seen a lot more about the global warming problem since 1986 but previous administrations have chosen not to fund this study. They funded several site specific beach erosion and beach nourishment projects but not the general study that would address some of the studies across the board.

That has important implications for coastal Louisiana as well. We call your attention to that and urge a modest amount of funding for the study the Corps was authorized to do.

Turning to the Bureau of Reclamation, I think the darkest cloud on the horizon with regard to this legislation and fiscal year 1991 funding is the Central Utah Project, the Bonneville unit. According to figures supplied to the authorizing committees by the Office of the Inspector General at the bureau, it now appears that the bureau is lacking the authorization needed to continue funding the project.

There are many other problems in addition to the authorization ceiling which are enumerated in our testimony and I won't go into. But it does appear that they lack the ceiling. The authorizing committee in the House has held one hearing on trying to put together a reauthorization bill. I would say the outlook for that is rather iffy. There has not been any further action since the meeting in Nebraska. We have indicated to the delegation that we are willing to work with them to try to develop a mutually agreeable bill that can respond to some of the problems with the project and provided the necessary ceiling increase and we are willing to work on that as hard as necessary to get something moving.

But in the absence of a ceiling increase, Mr. Chairman, we would recommend that the subcommittee forego major additional funding, over $80 million has been requested for this project and that if anything be provided it simply be a modest amount of funding for custodial purposes to maintain the project and construction sites, et cetera, until these matters can be resolved.

Mr. **Bevill**. I am sorry, but your time is up. Can you wrap it up in 30 seconds?

Mr. **Osann**. Certainly. We support additional funding for the Garrison Diversion Project. We don't agree with the Administration approach to cut it off. We would like to work with you to provide some additional recommendations on what the appropriate funding levels would be and the purposes for that.

Finally I would say, Mr. Chairman, that an issue that I know you are concerned about, the relicensing activities of the Federal Energy Regulatory Commission, there is a balloon in the works in the work load of FERC with regard to hydro licensing. Many projects are coming up for relicensing in the early 1990's and FERC simply is not staffed to handle the additional work load inevitably coming in their direction.

So we are requesting a modest increase in the FERC budget to allow for additional staffing.

Mr. **Bevill**. You have made some very good points. I am hoping the staff will look into some of those there to see what, if anything, we might be able to do.

We appreciate your testimony.

Mr. **Osann**. Thank you, Mr. Chairman.

Mr. **Bevill**. You have certainly made some very good points.

Mr. **Osann**. Thank you.

[The statement of Edward Osann follows:]

Working for the Nature of Tomorrow.
NATIONAL WILDLIFE FEDERATION
1400 Sixteenth Street, N.W., Washington, D.C. 20036-2266 (202) 797-6800

Testimony of

Edward R. Osann
Director, Water Resources Program
of the
National Wildlife Federation

Regarding

FY 1991 Appropriations Requests
for the

Corps of Engineers
Bureau of Reclamation
Power Marketing Administrations
Federal Energy Regulatory Commission

Before the

Subcommittee on Energy and Water Development
House Appropriations Committee

April 4, 1990

Printed on Recycled Paper

Good afternoon. I am Edward Osann, Director of the Water Resources Program of the National Wildlife Federation. The Federation is the nation's largest conservation organization with over 5.8 million members and supporters and 51 state and territorial affiliate organizations. The budgets of the Federal water resources construction agencies directly affect the environmental concerns of our members.

In our view, the knowledge, skills, and experience of the Corps of Engineers and the Bureau of Reclamation should be redirected from traditional water resources development to mitigating past environmental damage, protecting and enhancing the environment, and making more efficient use of existing facilities. The agency budgets should reflect such contemporary concerns as wetland protection and enhancement, global warming, water quality, and energy and water misuse and overuse.

CORPS OF ENGINEERS

The National Wildlife Federation applauds the environmental initiatives included in the Administration's FY 1991 budget request for the Corps. Most of these proposals are sound public and environmental policy and we urge the Subcommittee to fund them. Nevertheless, certain projects are recommended for funding that do not make economic or environmental sense. Instead, the Subcommittee should use budget savings from marginal projects to increase funding for more environmentally sound measures.

THE SUBCOMMITTEE SHOULD APPROPRIATE FUNDS REQUESTED BY THE ADMINISTRATION FOR MEASURES THAT HAVE REGIONAL OR NATIONAL IMPORTANCE FOR PROTECTING AND ENHANCING THE ENVIRONMENT.

Mitigation. We urge the Subcommittee to approve all of the Administration's funding requests for mitigation authorized in Section 601 of the Water Resources Development Act of 1986 (WRDA). Much of this mitigation is many years overdue. The five-year sunset provision of the 1986 Act makes it absolutely necessary to initiate funding for each project in FY 1991. Conservationists in Alabama and Mississippi strongly support implementation of the authorized mitigation plan for the Tennessee-Tombigbee Waterway. The $20 million requested by the Administration will purchase mitigation lands from willing sellers.

The Subcommittee should confirm Army's reprogramming of $4 million from FY 1990 for the Yazoo Basin Backwater Project Mitigation in Mississippi. This mitigation project will purchase and reforest marginal croplands to replace 7100 acres of bottomland hardwoods cleared for construction of the levees. Adequate provision should be made for mitigation of project-induced clearance of bottomlands.

Yazoo Basin Reformulation Study, MS. ($5.9 million requested) The Governor of Mississippi approved the recommendations of a state advisory committee that this project be completely reviewed and redesigned to focus benefits more specifically on reducing urban flood damage. Important work can proceed during the reformulation period, including urban and community flood control measures, dam safety work, mitigation, and many elements of the Demonstration Erosion Control Program.

Regulatory Program. ($75 million requested) We commend the Administration for its proposal to provide a substantial and badly needed boost to the Corps Regulatory Program. This funding will allow the Corps to better fulfill its statutory obligations for its §404 permit review, enforcement, and monitoring efforts, and to play a more aggressive role in contributing to the President's goal of "no net loss of wetlands."

Harbor Maintenance Trust Fund. (Est. receipts $485.5 million). Approximately $293 million of the Corps' $3.3 billion budget is dependent upon enactment of proposed legislation to increase the harbor maintenance fee from $.40 per $1000 to $1.25 per $1000 of the value of cargo loaded or unloaded. Although NWF believes that user fees based upon vessel size and specific dredging costs provide greater efficiencies than *ad valorem* fees, we support the proposed fee increase.

Wallisville Lake, TX. We concur with the Administration's decision not to fund this controversial dam. Both water supply and water conservation plans in the Houston area are in a state of flux. Alternatives in the forthcoming master water plan include an inflatable barrier or an inexpensive diversion of saline water through an existing upstream canal. It appears that the sponsors are considering the more costly dam in order to take advantage of the obsolete cost allocation prepared in 1967. That cost allocation allows the city of Houston and the Trinity River Authority to obtain water for about 10% of current costs allocated to the Municipal & Industrial (M&I) purpose, which does not conform to current policy requiring that 100% of the costs of M&I water projects be paid by the non-federal sponsor. The dam is opposed by conservationists because it would reduce the delivery of fresh water from the Trinity River to Galveston Bay, a valuable estuary for commercial and recreational fisheries.

THE SUBCOMMITTEE SHOULD ELIMINATE FUNDING FOR TWO PROJECTS

Richard B. Russell Dam, GA and SC. ($19 million requested) We oppose further commitment of funds--whether previously appropriated or newly appropriated--to install pumped storage turbines or dredge the tailrace unless fish protection measures have been designed, tested, and approved in consultation with state and federal fish and wildlife agencies. Both installation and dredging would be a waste of money because the U.S. Court of Appeals has ordered the Corps not to test or operate the reversible turbines until operations can be shown not to harm the fishery.

Olmsted Lock and Dam, IL and KY. ($3.5 million requested) This billion dollar project requires new authorization as its scope has changed materially. The Corps now plans to dredge four times the amount of material estimated in the original authorizing document. The necessity for replacing the two existing locks, which have been rehabilitated recently, should be carefully reviewed and reconsidered.

Fort Pierce Harbor Expansion, FL. (No funds requested) This is a project in search of a purpose, and it should not be funded as proponents advocated in earlier testimony. There are no commitments by anybody to use any of the port facilities if they are built. In addition to these economic shortcomings, all forecasts indicate it will be an environmental disaster. Port expansion would destroy sea grass vital to the area's sport and commercial fishery.

SEVERAL PROGRAMS SHOULD BE FUNDED AT HIGHER LEVELS THAN REQUESTED BY THE ADMINISTRATION.

No net loss of wetlands action plan ($0 requested) and the **Wetlands Research Program** ($3 million requested in R&D). At least $2 million is required to prepare a "No net loss of wetlands action plan" and a wetland data base to enable the Corps to evaluate its wetlands program. The wetlands plan should incorporate long-range measures to assist in the achievement of the North American Waterfowl Management Plan's goals. The wetlands plan and the wetlands data base should be developed concurrently with the Corps' proposed three-year $22 million program for research on the functions and values of wetlands and ways to restore wetlands.

Sea-level rise study. ($0 requested) and **Climate change research program** (R&D) ($0.5 million). The Administration requested $500,000 to develop predictive models and evaluation techniques for impacts of climate change on Corps activities. In addition, $2 million should be provided to the Corps to evaluate the potential impacts of rising sea-level as authorized by § 731 of the 1986 Water Resources Development Act. As part of this study, we urge the Corps to evaluate the effects of sea-level rise on coastal wetlands in Louisiana for each scenario identified by the Environmental Protection Agency and the Corps in 1987 in order to provide critical information to the State and Congress in addressing the restoration of Louisiana wetlands.

BUREAU OF RECLAMATION

The Bureau's FY 1991 budget request makes only limited strides towards the Bureau's stated New Directions--to emphasize non-structural solutions, existing facility management, water conservation, and environmental protection.

THE SUBCOMMITTEE SHOULD SUPPORT INITIATIVES THAT REFLECT THE ANNOUNCED 'NEW DIRECTION' OF THE BUREAU OF RECLAMATION.

We applaud the new $2 million **Wetlands and Refuges** initiative and increased funding of Technical Assistance for **Water Conservation**. In addition, we urge that special emphasis be placed on protection and restoration of damaged wetlands, which are critically important to the protection of migratory birds and the success of the North American Waterfowl Management Plan. We also support the increased budget emphasis ($72 million requested) for **Dam Safety**.

THE SUBCOMMITTEE SHOULD REDUCE OR ELIMINATE FUNDING FOR PROGRAMS AND PROJECTS WITH SERIOUS ENVIRONMENTAL, FINANCIAL, AND BUDGET-CEILING PROBLEMS.

Bonneville Unit, Central Utah Project. The Federation urges the elimination of the $83.8 million requested by the Administration for the Bonneville Unit for FY 1991. According to audit figures presented by the Inspector General of the Department of the Interior to the House Interior Committee, expenditures for the project may have already exceeded the project's authorized cost-ceiling, thus authorization for appropriations for FY 1991 appears to be lacking. Furthermore, prospects for a reauthorization during the 101st Congress are uncertain. Hearings were held in February in the House Water and Power Subcommittee, but the Administration withheld its views and additional action on the Utah delegation's bill is not scheduled in either the House or the Senate.

Numerous fundamental issues remain unresolved to plague this project. These include: 1) The project is out of compliance with NEPA, including the specific directive in P.L. 100-563 to complete an EIS on the Irrigation and Drainage System by December 1989--an EIS that has not even been started; 2) The Utah Ute Indians have declared void the 1965 Agreement that would allow the interbasin diversion of the major portion of Colorado River water needed for operation of the project; 3) No acceptable cost-sharing plan exists for the irrigation system, and there is no concrete evidence of willingness of the State of Utah or its subdivisions to provide a meaningful cost share; 4) Operation of the project will cause major adverse environmental impacts, especially through dewatering of numerous Utah streams, and the Bureau has failed to adopt a plan to meet the requirements of the 1980 Instream Flow Agreement between the State of Utah and federal resources agencies; 5) The basic hydrologic operation of the project, including the Jordanelle Dam, is the subject of fundamental criticism by several Utah organizations and local government leaders and requires a complete and comprehensive review; 6) No contingency plan exists to provide for the major changes in the project that would be required in the event that the irrigation system is not built; and 7) No meaningful requirements for water conservation have ever been developed to ensure that the water provided by this costly project will not be wasted.

We have expressed to the Utah delegation and to the authorizing committee our willingness to cooperate in the development of legislation to resolve these issues. Extensive discussions have taken place under Congressman Owens' leadership since February, and more discussions are expected within the next few weeks. Nevertheless, we strongly recommend that the Subcommittee limit any additional funding for the Bonneville Unit for FY 91 to such minimal amounts as may be necessary for custodial purposes--to stabilize and maintain construction sites and completed works--unless and until agreement is reached on comprehensive reauthorization legislation.

Animas-La Plata, Colorado. Although the project received start-up construction funding of $5.9 million in FY 1990, it is unlikely that any construction will begin this fiscal year because of local controversy over repayment contracts, insufficient farmer petitions for irrigation water, and delays in moving forward on the Indian Water Rights Settlement decree. With an irrigation subsidy of nearly $6000 per acre, this project is one of the least economical projects ever planned by the Bureau of Reclamation. As evidenced by the tie vote in a recent tribal election, the Southern Utes are deeply split on the value of the settlement to their tribe. Also, a bitterly fought county-wide election is scheduled for April 17 regarding the M & I water contract for northern New Mexico cities. Because of recent discoveries of endangered Colorado River squawfish downstream of the proposed project in the San Juan River, the U.S. Fish and Wildlife Service has begun formal consultation under Section 7 of the Endangered Species Act to determine what modifications in project design and operations must be made to protect the species and habitat. The process may take a year or more, during which time project construction may not begin. No additional construction funds should be appropriated unless and until adequate local support can be demonstrated and until endangered species consultation is complete.

Other cost ceiling issues. No further funding should be included for the Dolores and Dallas Creek projects in Colorado until further spending authorization is obtained. The Interior Inspector General has reported that as of September, 1986, expenditures on these projects had exceeded their authorized cost ceilings by $261 million--overruns "that were not disclosed to Congress," and which are expected to grow to $321 million by September, 1990.

Colorado Basin Salinity Control. We urge the Subcommittee to review carefully all ongoing salinity control spending and seek a full report from the Bureau on the program's costs and efficacy. The salinity control program was severely criticized by the Department's Inspector General in a report issued last September. The Title II Salinity Prevention program costs are estimated now at $653 million, far above the current appropriation authorization of $287 million, and few water quality projects are actually implemented and operating to help meet U.S. treaty obligations to Mexico. The Subcommittee should consider the cost effectiveness of land purchase and retirement as an alternative to structural measures.

Garrison Diversion Unit, ND. The Administration has budgeted no new funds for the Garrison project for FY 1991. We disagree with this recommendation. The current project plan, pursuant to the Garrison Diversion Reformulation Act of 1986, includes municipal, rural, and industrial (MR & I) water service; up to 130,000 acres of irrigation service; acre-per-acre mitigation of damages to fish and wildlife habitat resulting from construction of the project, to be implemented concurrently with project construction; and a North Dakota

Wetlands Trust, to foster a cooperative Federal and State approach to the restoration of nationally important "prairie pothole" wetlands. The 1986 Act also deauthorized obsolete and impractical irrigation works first approved in 1944, which were estimated to cost some $2.6 billion if built.

The 1986 Act was the embodiment of a sincere effort to resolve longstanding differences. It contains checks and balances that protect the Treasury as well as the environment, while keeping faith with North Dakota's desire for additional utilization of the waters of the Missouri River. We believe that successive Administrations, with due allowance for current budgetary constraints, should maintain the Federal-state partnership that was contemplated by the 1986 Act.

That being said, it is necessary to report on forces within the State that have undermined this partnership as well. The design and location of the Sykeston Canal -- the "missing link" in the project's principal supply works -- remains unresolved. Indeed, the Manager of the Garrison Diversion Conservancy District has asserted that Sykeston will be too costly to build and maintain, and seeks a revival of a modified version of the controversial Lonetree Reservoir instead. This campaign by the District will further stall the signing of the new master repayment contract required by the 1986 Act, as well as related irrigation service area contracts. Thus, the ability to move forward with much of the project's authorized irrigation development remains quite limited. We have also been disappointed with the lack of progress in coordinating wetland protection and agricultural activities under the "Statement of Principles" signed in 1986 by the Governor, environmental groups, and irrigation interests.

The MR & I program, however, has received enthusiastic support, the Wetlands Trust is up and running, and various recreation and fish and wildlife components of the project have moved through the planning process. We have not had the opportunity to make a detailed review of the funding request submitted by the State and the District to the Subcommittee last week. However, it appears that a modest amount of funding for FY 1991 could be put to good use for those activities that are authorized by law, procedurally ready, covered by necessary repayment agreements, and environmentally sound. We will advise the Subcommittee of our specific suggestions in the near future. Such an appropriation would, in our judgment, be the right message for Congress to send to both the State and the Administration.

Columbia Basin Extension, WA. ($3 million requested) Funding should be halted for continued "land acquisition and drainage construction." Several state agencies oppose irrigating additional lands because the costs exceed the benefits, additional production will drive down crop prices, and increased diversions will counter current efforts to mitigate for the huge fish and wildlife losses from existing Columbia River Basin projects.

POWER MARKETING ADMINISTRATIONS

Hydropower repayment. More timely repayment of the federal hydropower investment would enhance energy conservation in the regions served by the Power Marketing Administrations. The Administration's budget includes FY 1991 power revenues reflecting its proposal to require straight-line amortization of the federal investment, with interest on the unpaid balances accruing at current market interest rates. We believe the Administration has existing authority to require straight-line amortization. Implementation of a business-like amortization would avoid the shortcomings of current repayment practices that shortchange the Treasury in the near term, while sharply increasing rates in future years. Legislation will be required, however, to change many of the grandfathered interest rates to reflect current Treasury borrowing rates.

The Administration is proposing to sell certain power marketing rights of the Southeastern Power Administration. Any proposed sale should be conditioned on a full review under the National Environmental Policy Act. NEPA provides a framework and forum for the development and evaluation of all reasonable alternatives.

Power purchases. The Southeastern and Southwestern Power Administrations request funding of $17.6 million and $12.1 million, respectively, to purchase power for resale to their customers. The price of purchased power is generally higher than the price of resold power. Under the current practice, the losses on purchased power are to be repaid over the next 40-45 years at low interest rates. The 1990 Energy and Water Development Appropriations Act attempted to rein in such subsidies by requiring the Western Area Power Administration's customers to repay the cost of purchased power within 12 months. The Subcommittee should take similar action with respect to Southeastern and Southwestern. Western has also established a revolving fund for power purchases. Nevertheless, it is requesting another $100 million for power purchases for FY 1991. The Subcommittee should question this request in light of its 1990 instructions.

FEDERAL ENERGY REGULATORY COMMISSION

The Federation is concerned that the Administration has not adequately anticipated funding needs for environmental reviews in hydroelectric licensing. The Commission expects an unprecedented workload of more than 170 relicensing filings in the first months of FY 1992. These will require considerable FY 1991 staff involvement in pre-filing activities. The Commission's budget also indicates that among the "more than 140" licensing completions expected in FY 1991, . . ."a high percentage will require preparation of an EIS because of the number and complexity of the environmental issues associated with these projects." Yet, the Commission's budget anticipates completion of only 2 EIS's in FY 1991 and starting work on 11 others. The Commission risks major delays in relicensing proceedings if funding is not increased. On average, the Commission has completed only 2 EIS's each year for the past 5 years. We recommend an additional $2 million in FY 1991 to expedite current NEPA reviews and to begin preparation for the large relicensing workload.

Thank you for the opportunity to present these views.

Mr. Bevill. I also have a statement from the National Audubon Society that I will place in the record at this point.

[The information follows:]

National Audubon Society

National Capital Office 801 Pennsylvania Avenue, S.E. Washington, D.C. 20003 (202) 547-9009

STATEMENT FOR THE RECORD

4 APRIL 1990

TO: SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT, HOUSE APPROPRIATIONS COMMITTEE

RE: ENERGY AND WATER APPROPRIATION FOR FISCAL YEAR 1991

BY: EDWARD F. PEMBLETON, DIRECTOR OR WATER RESOURCES PROGRAM

On behalf of the National Audubon Society and our 565,000 members and over 510 chapters throughout the country, we appreciate this opportunity to present the following comments for the Subcommittee's consideration.

Garrison Diversion Unit, Pick-Sloan Missouri Basin Program

We had anticipated having a statement for the Subcommittee today, however, we did not receive the budget proposal from the Garrison Conservancy District and the State until late last week, and have still not received the requested additional information required to fully evaluate their proposal Consequently, we are unable to complete an analysis of their proposal in a timely manner prior to today's hearing. Once we have received the necessary information and completed our assessment we will notify the Subcommittee of our views.

The terms and conditions of the Garrison Reformulation Act passed in 1986, and the Statement of Principles signed at that time, represented a very important and carefully drawn piece of legislation and an agreement of significance to North Dakota, Canada, environmental interests and other affected parties. As one of the organizations that helped forge the Garrison Reformulation Act, we have consistently stood by the terms and conditions and we are prepared to do so again this year. However, given the recommendations of the Administration and given the fact that we have not had an adequate opportunity to evaluate the proposal received last week we want to complete our analysis prior to submitting our recommendations and comments to the Subcommittee.

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WEDNESDAY, APRIL 4, 1990.

MISSOURI RIVER MITIGATION PROGRAM

WITNESSES

J. EDWARD BROWN, STATE WATER COORDINATOR, IOWA DEPARTMENT OF NATURAL RESOURCES

STEVEN ADAMS, AQUATIC ECOLOGIST, KANSAS DEPARTMENT OF WILDLIFE AND PARKS

M. J. WHITING, FARMER, WHITING, IOWA

Mr. BEVILL. Mr. J. Edward Brown, Iowa Department of Natural Resources is next. We are pleased to have you with us.

Mr. BROWN. Thank you, Mr. Chairman.

I brought some moral support for the final session. I thought I would give some folks a chance of sharing the honor with me of testifying late in the day. I have Steve Adams an aquatic ecologist with the Kansas Department of Wildlife and Parks. On my right is Jim Whiting, a farmer from Iowa who has been involved locally in terms of the mitigation program.

I think this year from what I have heard of the testimony, you have already had some substantial testimony in favor of the program. I think that from the standpoint of my testimony at this point I would like to rely largely on the written testimony that we have provided for you and which will be in the record, I imagine.

Mr. BEVILL. Yes, your entire statement will be in the record.

Mr. BROWN. Mr. Whiting also wrote a letter of support for the record.

Mr. BEVILL. That will be made a part of the record.

Mr. BROWN. From the standpoint of a few points I would like to address, I did have a chance to go out and survey the circumstances this year on the Missouri River. I was really quite distressed to find that the situation continues to get worse not only because the river degrades in the upper reaches just below the reservoirs causing the water levels to drop, but the whole basin has been subject to drought conditions.

The combination has left the area with precious little of what you might characterize as wetlands. What was an extensive area of wetlands is now pretty much devastated. We have asked for first of all an opportunity to support the recommendation of the President for the $429,000 in planning.

It is our understanding that the planning is largely completed or would be completed by the end of this fiscal year. So we would appreciate it if you would consider language that would allow the Corps to spend that money for land acquisition for other activities that would move us along productively.

Also, if the committee can find priority for additional funds within the budget, we would certainly appreciate your consideration of this project. I recognize that the budget circumstances are not favorable but we certainly would appreciate your consideration of the priority of this activity.

From the standpoint of the project, I think you have also seen at least a letter from the four governors in support of the program. Finally, I think I have perceived a whole bunch of letters from practically every local jurisdiction near the river in Iowa. I believe some of those have been forwarded to you by some of our members.

With that, I thank you for the opportunity to talk to you today. I will certainly be happy to answer any questions.

Mr. Bevill. It was a very fine presentation. We will look into these and see what we can do.

Mr. Brown. Thank you very much.

[The statements of Edward Brown and others follow:]

TESTIMONY

OF

THE IOWA DEPARTMENT OF NATURAL RESOURCES

Before the
Subcommittee on Energy and Water Development
House Appropriations Committee

April 4, 1990

Hearings on
FY 1991 Appropriations for the U.S. Army Corps of Engineers

Missouri River Mitigation Project,
Iowa, Kansas, Missouri and Nebraska

Upper Mississippi River System
Environmental Management Program

Presented By
J. Edward Brown
State Water Coordinator

Statement of the
Iowa Department of Natural Resources
on FY 1991 Energy and Water Development Appropriations

April 4, 1990

I come here today to thank the members of this subcommittee for your assistance last year in providing funds for protection of the environmental and economic value of fish and wildlife habitat within the boundaries of the two national river systems which serve as Iowa's eastern and western borders. I also hope that this testimony will convince you to continue that commitment for fiscal year 1991.

MISSOURI RIVER FISH AND WILDLIFE MITIGATION

We support the $429,000 funding level as contained in the President's 1991 budget for fish and wildlife mitigation of the Missouri River Bank Stabilization and Navigation Project. We ask that the appropriation language provide that the Corps of Engineers be directed to initiate acquisition of real estate required for the project using any funds not needed for completion of the planning and design activities. If additional funds are appropriated for the project they could be used effectively. Priority projects which have been proposed by the four state fish and wildlife agencies for project initiation have an estimated cost approaching $8,000,000. The project proposed by Iowa could proceed to construction once project specific engineering plans are prepared. We ask that additional funding for this program be found within the existing Corps construction budget.

As the State Water Coordinator, one of my responsibilities is to serve as the Governor of Iowa's designee on the board of directors for both the Missouri and Mississippi River Basin State Associations. Since two of Iowa's borders are defined by these national river systems our historical ties to them are very strong. We rely on the rivers for water supply for our people's domestic and commercial needs, transportation of commodities to national and international markets, hydropower and other power production, as well as recreation. While these needs have all been recognized for many years, it has only been in the past few decades that we have come to regard the habitat in and along the rivers as equally important to our state and to the nation. As you may recall for example, the Fish and Wildlife Coordination Act which is the basis for the mitigation requirement was adopted in 1958.

As was noted before the Subcommittee last year, the natural resources of the Missouri River have suffered greatly from the development of structures to serve man's purposes. Gone are the broad flat floodplain with the braided slow-moving waters which once characterized the river. Lost are the islands, sandbars and wetlands which supported the wide variety of migratory waterfowl and terrestrial wildlife. With quiet backwaters and sloughs, the river was home to countless fish for commercial as well as recreational activity.

In our testimony last year we noted in great detail the losses to habitat which were the consequence of the original project on the Missouri. With the drought conditions in the Missouri River Basin continuing throughout 1989, the fate of these dwindling resources is even more closely tied to the progress of mitigation. Migratory waterfowl for example found little opportunity to stop off for food and rest in quiet backwaters. Oxbow lakes which formerly provided refuge were dried up by the combination of drought conditions and the relentless degradation of the

Missouri River's bed which results from the swiftness of the current in the restricted channel.

We appreciated the response of the Congress and especially the work of this subcommittee to propose funding of $300,000 for planning and design for FY 90. This initial funding has been accepted by the Corps of Engineers as the basis to move forward.

Almost immediately after final action by Congress last year, the Missouri River Division of the Corps began to assess what actions were needed to facilitate the construction phase of the program. The Kansas City District was given the responsibility to lead the implementation effort. The states have become involved in an advisory capacity in this process, and we are hopeful that this role will provide the basis for cooperation during the construction of the various projects along the river. We continue to strive for a cooperative relationship on the Missouri to match that which currently exists on the Mississippi River. While we are not engaged in mitigation on the Mississippi, the activities are essentially the same.

Last year, the four states of Iowa, Kansas, Missouri and Nebraska coalesced their efforts to represent their concerns to you in order that the need for this mitigation effort might be better appreciated. Several months ago, in anticipation of the federal appropriations process for fiscal year 1991, the governors of our four states asked President Bush to consider the Missouri River Mitigation Project in his budget. As you probably know, the President's budget does include a request for $429,000 of additional funding to complete the planning and design phase of the program. Because the Corps of Engineer's Missouri River Division has been attempting to facilitate all of the preliminary activities which precede construction, we understand that construction activities could commence after October 1, 1990. Our request, consistent with that possibility would provide the Corps with the flexibility to use the funds appropriated in the most effective manner.

The President has indicated that wetlands protection and the implementation of the North American Waterfowl Plan are national priorities. The Missouri River Mitigation program satisfies both objectives.

Based on the previous actions of this Subcommittee in particular, and the Congress as a whole, we hope that Missouri River Mitigation might receive favorable consideration for some additional funding for construction. We are not asking for funding above the President's recommended construction budget, but would ask the Subcommittee to attempt to find a way to provide funds for construction within the existing construction budget.

During the past year, as people along the River became aware of the Corp's planning activities, public support began to manifest itself in a variety of ways. Our agency, the Governor and the members of Congress from Iowa have all been receiving letters from virtually every unit of local government along the Missouri River. We have been asked to attend meetings sponsored by the state representatives and senators whose districts border the river to discuss progress that has been made in starting the mitigation effort. The Iowa General Assembly has adopted a resolution in support of the Missouri River Mitigation Program.

In summary on this element of our comments, the Missouri River Mitigation Project is a very popular program. Four states and their citizens are asking for continuation of this effort. Your continued support will provide critical assistance to save or restore a small portion of what was once a vast natural resource area and which is still today a significant element of a national river system.

UPPER MISSISSIPPI RIVER ENVIRONMENTAL MANAGEMENT PROGRAM

A second program of interest to Iowa is the Upper Mississippi River Environmental Management Program or EMP. The program is an important experiment to demonstrate our ability to maintain environmental values, perhaps best personified by the wildlife refuge, at the same time that the river system supports economic interests such as navigation and variety of commercial enterprise.

We are thankful for the support that this Subcommittee has shown for the EMP program in the past. This year the President's budget proposes about the same effort as last year with an appropriation of $14.9 million versus the $19.45 which is authorized. While we are appreciative of the funding which has been received, we are compelled by the nature of the program to seek at least your consideration of funding at the fully authorized level. Recognizing the realities of the federal deficit, this request comes within the context of the current level for the budget as a whole.

As it matures, this program provides both insight and practical examples of how competitive uses of the river system can all be maintained if adequate resources are applied to each of them.

By their nature, early efforts under this program have been somewhat experimental in nature. A variety of smaller projects characterize the EMP program, and their purposes, which are divergent as well, suit the needs for habitat within the particular reach of the river. Much of the battle is to hold back sediment from shallow backwater areas, which results from non-point sources and becomes resuspended with traffic on the river. Susceptible areas can be protected by diverting flows of silt laden waters. Shallow areas can be deepened to allow fish to winter over where they would otherwise be forced out by ice cover. A broad range of aquatic and terrestrial habitat can be established to support the needs of migratory waterfowl. Because of these features, these projects also can serve the needs of the North American Waterfowl Plan.

This is the fourth year in a ten year authorization. Because it is not comprised of a single project, but is instead many smaller ones, the impacts of reductions is greater. It is important that the program receive funding at the fully authorized level. The impact of reduced funding will manifest itself in at least two important ways.

Over 50 specific projects are identified in the program. Only four have been completed to date and four more have gotten to contract award. Less than full funding in FY 1991 is expected to delay the completion of seven projects by as much as one year.

The long Term Resource Monitoring Program, which is a broad based assessment of the quality of the River resource for the entire upper basin, is the foundation for assessment of the condition of the basin and hopefully will provide valuable insight into the impact of ongoing activities with time. We must have complete support for monitoring now. Each day lost is a day of information lost. The complexity of the system and the variety of conditions makes it imperative that we establish the longest period of record possible.

This monitoring data will guide our decisions in future years. It will be key in evaluating what we have accomplished. There is also emerging an external example of how this data can become pivotal to basin activities. Proposals to assess the need to upgrade the navigation system are being made. These studies as well as the Environmental Management Program will rely on the data base created by the Long Term Resource Monitoring Program. We are confident that the availability of good data within the basin will greatly enhance decision making and minimize delays required for assessment.

Although the number of completed projects are few in number, the inherent physical attributes of the construction activity provide ample visual verification of the benefit of the work to the restoration of habitat diversity. We are confident that your continued support of this program will reap substantial benefits to this important national river system.

OFFICE OF THE GOVERNOR
STATE CAPITOL
DES MOINES, IOWA 50319
515 281-5211

TERRY E. BRANSTAD
GOVERNOR

The Honorable George Bush
President
The White House
1600 Pennsylvania Avenue
Washington, D. C. 20500

Dear President Bush:

For over a decade the states of Iowa, Kansas, Missouri and Nebraska have been seeking the authorization and funding for the mitigation of fish and wildlife habitat losses which occurred along the Missouri River as a result of the bank stabilization and navigation project. The mitigation program was mandated by the 1958 Fish and Wildlife Coordination Act and was authorized for funding in the 1986 Water Resources Development Act. Recently, the Congress appropriated $300,000 for planning and design for this project in FY 1990.

The program is consistent with your views regarding the protection of wetlands and furthers the objectives of the North American Waterfowl Plan. The Missouri River is a national resource which once featured a broad flood plain and a wide variety of sand bars, side channels, marshes and other areas which provided habitat for large numbers of migratory waterfowl and a tremendous diversity of fish and wildlife. Many of these diverse features were lost when channelization altered the river's characteristics.

The mitigation effort is designed to restore a portion of this diversified habitat through a number of small projects along the river. Our proposal is clearly consistent with your environmental and natural resource priorities.

As governors we support the Missouri River Mitigation Project and are asking you to provide funding for construction of mitigation projects along the Missouri River in your FY 1991 budget proposal.

Sincerely,

Terry E. Branstad
Terry E. Branstad,
Governor of Iowa

Mike Hayden
Mike Hayden,
Governor of Kansas

Kay A. Orr
Kay A. Orr,
Governor of Nebraska

John Ashcroft
John Ashcroft,
Governor of Missouri

Missouri River Steering Committee
Subcommittee for Monona County Economic Development Corporation
Onawa, IA 51040
March 28, 1990

The Honorable Tom Bevill, Chairman
Subcommittee of Energy and Water Development
House Appropriations Committee
2362 Rayburn House Office Building
Washington, DC 20515

Dear Congressmen Bevill:

We are writing to express our strong support for the proposal put forward by state and local officials in Iowa, Nebraska, Missouri, and Kansas under authority provided in the Water Resources Development Act of 1986 for wildlife mitigation along the Missouri River. We are asking that appropriations be made specifically designed for construction in the Corps of Engineers budget for Fiscal Year 1991 in the Energy and Water Appropriations Bill.

We feel this request is justified at this time because if the Missouri Rivers' natural oxbows and lakes are allowed to continue drying up, communities along the river will lose valuable opportunities for economic growth as well as priceless wetlands that provide habitat for fish, wildlife nesting, and, in particular, the environment for thousands of migratory waterfowl.

We believe the longer this project is delayed, the more expensive it will be. We also believe if we want to save this environment we must act now.

We're asking that you give us full funding support for this important project, and that this letter be added to the record of the sub Committee Hearing.

Best personal regards,

Jim Whiting,
Chairman

MISSOURI DEPARTMENT OF CONSERVATION

MAILING ADDRESS
P.O. Box 180
Jefferson City, Missouri 65102-0180

STREET LOCATION
2901 West Truman Boulevard
Jefferson City, Missouri

Telephone: 314/751-4115
JERRY J. PRESLEY, Director

March 27, 1990

The Honorable Tom Bevill, Chairman
Subcommittee on Energy and Water Development
2362 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Bevill:

Thank you for this opportunity to provide testimony for the written record before the Energy and Water Development Subcommittee on the U. S. Army Corps of Engineers' FY'91 budget.

I would like to thank you for the FY 1990 appropriation originating from your committee to initiate the Missouri River Fish and Wildlife Mitigation Project. We believe the Corps of Engineers has efficiently used that money to begin the planning process, as we have had several meetings this past year and are quite satisfied with progress to date.

We have worked this past year with the Governors of Iowa, Nebraska, Kansas and Missouri Governor Ashcroft for continued appropriations. In response, the President has included an item in his budget for the mitigation project.

We support the $429,000 funding level as contained in the President's 1991 Budget for Fish and Wildlife Mitigation of the Missouri River Bank Stabilization and Navigation Project. We ask that the appropriation language provide that the Corps of Engineers be directed to initiate acquisition of real estate required for the project using any funds not needed for completion of planning and design activities. If additional funds are appropriated for the project, they could be used effectively. Priority projects proposed by the four state wildlife agencies for project initiation have an estimated cost approaching $8,000,000.

Thank you for the opportunity to provide comments and testimony to the subcommittee.

Sincerely,

Jerry J. Presley

JERRY J. PRESLEY
DIRECTOR

cc: Missouri Congressional Delegation
Governor John Ashcroft

COMMISSION

JERRY P. COMBS
Kennett

ANDY DALTON
Springfield

JAY HENGES
St. Louis

JOHN POWELL
Rolla

KANSAS
WILDLIFE & PARKS

OFFICE OF THE SECRETARY
900 Jackson St., Suite 502
Topeka, Kansas 66612-1220
913-296-2281

DEPARTMENT OF WILDLIFE & PARKS
MIKE HAYDEN, Governor
ROBERT L. MEINEN, Secretary
W. ALAN WENTZ, Assistant Secretary

April 2, 1990

The Honorable Tom Bevill, Chairman
Subcommittee on Energy and Water Development
2362 Rayburn House Office Building
Washington, D.C. 20515

Dear Chairman Bevill:

This letter is for the purpose of providing testimony for the written record before the Energy and Water Development Subcommittee hearings on the U.S. Army Corps of Engineers fiscal year 1991 budget.

During the current fiscal year, the appropriation for planning and design for the Missouri River Fish and Wildlife Mitigation Project has been effectively used by the Corps of Engineers. Throughout this process several meetings have occurred between the Corps and the states of Kansas, Missouri, Iowa and Nebraska. We are pleased with the progress that has been made during this time and are encouraged by the level of cooperation that has been demonstrated.

We strongly support the $429.000 included in the President's 1991 Budget for Fish and Wildlife Mitigation of the Missouri River Bank Stabilization and Navigation Project. These funds are necessary to continue the work which was initiated this year and complete the planning process of this project. In addition we request that language be included in the appropriation to direct the Corps of Engineers to begin acquisition of real estate necessary for the mitigation project with any remaining funds not needed for the planning and design process.

Thank you for the opportunity to provide testimony for the written record before the subcommittee.

Sincerely,

Robert L. Meinen, Secretary
Kansas Dept. of Wildlife & Parks

RLM:SRA:wp

Equal Opportunity Employer

Mr. **Bevill**. Well, you were the last witness.

Mr. **Brown**. In fact, I was the last one last time.

Mr. **Bevill**. We always save the most important for last.

Mr. **Brown**. I believe my comment to the committee was either they would think I was a fool for sticking around or commend me for my endurance.

Mr. **Bevill**. I commend you for the endurance.

We have several move statements which were submitted for the record, and we will, without objection, include them at this point.

[The information follows:]

NEW MEXICO INTERSTATE STREAM COMMISSION

COMMISSION MEMBERS
ALBERT E. UTTON, Chairman, Albuquerque
J. PHELPS WHITE III, Vice-Chairman, Roswell
S. E. REYNOLDS, Secretary, Santa Fe
GEORGE BRANTLEY, Carlsbad
TRACY SEIDMAN, Wagon Mound
RICHARD C. JOHNSON, Silver City
SAMMIE SINGH, La Mesa
PETER A. CASADOS, El Guique
JACK D. COOK, Farmington

BATAAN MEMORIAL BUILDING
STATE CAPITOL
SANTA FE, NEW MEXICO 87503
(505) 827-6160

April 2, 1990

The Honorable Tom Bevill, Chairman
Subcommittee on Energy and Water
 Development
Committee on Appropriations
House of Representatives
2302 Rayburn House Office Building
Washington, D.C. 20515-0104

Dear Mr. Chairman:

Transmitted herewith is the statement of Garrey Carruthers, Governor of the State of New Mexico, in support of appropriations of funds to the Bureau of Reclamation for fiscal year 1991, for project investigations, construction and operation and maintenance of water resource projects of the Bureau of Reclamation. I would appreciate it very much if your subcommittee would consider this statement in its deliberations on appropriations to the Bureau of Reclamation for fiscal year 1991.

Sincerely,

Philip B. Mutz
Interstate Stream Engineer

PBM:rav

Enclosure

STATEMENT OF
GARREY CARRUTHERS, GOVERNOR OF THE STATE OF NEW MEXICO TO THE ENERGY AND WATER DEVELOPMENT SUBCOMMITTEE OF THE UNITED STATES HOUSE OF REPRESENTATIVES COMMITTEE ON APPROPRIATIONS

April 2, 1990

SUMMARY

This statement is submitted in support of appropriations for the construction and operation and maintenance of water resource projects authorized to be built by the Bureau of Reclamation and of appropriations for additional project investigations by Reclamation.

The President's Fiscal Year (FY) 1991 budget proposal for water resource projects of the Bureau of Reclamation in New Mexico and other states in which New Mexico has an interest appears sufficient, in light of the current budgetary constraints, to sustain progress on implementation of scheduled project construction and measures for salinity control of the Colorado River. In addition, the President's FY 1991 budget proposal for Reclamation's General Investigations and Operation and Maintenance programs provides for needed investigations and required operation and maintenance at operating projects. I fully support the President's FY 1991 budget proposal for all water resource projects of the Bureau of Reclamation that are of interest to New Mexico.

STATEMENT

COLORADO RIVER STORAGE PROJECT AND PARTICIPATING PROJECTS

The Colorado River Storage Project which became law in 1956 authorized a carefully planned and farsighted program for the development and use of waters of the Upper Colorado River Basin. To carry this program forward the President has recommended that $172.031 million be appropriated to the Bureau of Reclamation for FY 1991. That recommendation includes $13.415 million for the Animas-La Plata Project in Colorado and New Mexico, a project of keen interest to this state.

I fully support the President's FY 1991 budget proposal for the Colorado River Storage Project and participating projects.

CENTRAL ARIZONA PROJECT

The Colorado River Basin Project Act, Public Law 99-537, which became law in 1968 authorized construction of the Central Arizona Project in Arizona and New Mexico. The President's FY 1991 budget proposes $198.466 million to continue construction of this project. All of the construction proposed in the FY 1991 budget is in Arizona. The Hooker Dam and Reservoir Unit or suitable alternative in southwestern New Mexico is authorized for construction as a unit of the Central Arizona Project. I support the President's FY 1991 budget proposal for funding the Central Arizona Project.

CLOSED BASIN DIVISION, SAN LUIS VALLEY PROJECT, COLORADO

The President's FY 1991 budget includes $6.810 million for continued construction of the Closed Basin Division. This project will assist Colorado in meeting its Rio Grande Compact obligation at the Colorado-New Mexico stateline. The work proposed under the FY 1991 budget will include completion on the Stage 4 laterals, award contracts for Stage 5 pumps and prime movers, construct Stage 5 laterals and required appurtenant works. I fully support the President's FY 1991 budget in the amount of $6.810 million for this project.

BRANTLEY DAM AND RESERVOIR

The President's FY 1991 budget includes $500,000 for miscellaneous minor contracts to complete Brantley Dam and Reservoir and to breach McMillan Dam. Brantley Dam and Reservoir, located in southeastern New Mexico on the Pecos River, was dedicated in May 1989 and has continued in operation. Brantley Dam will replace the unsafe McMillan Dam and will provide capacity for storage of flood waters. I fully support the President's FY 1991 budget proposal in the amount of $500,000 for this project.

BUREAU OF INDIAN AFFAIRS DAM SAFETY PROGRAM

The President's FY 1991 budget includes $9.055 million for the technical activities and administration necessary to examine, analyze and perform corrective actions at Bureau of Indian Affairs dams in Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, South Dakota, Utah and Wyoming. About 52 dams with high or significant hazard classifications are involved. The safety of dams analysis activities include deficiency verification and conceptual modification designs. I fully support the President's FY 1991 budget proposal for this program.

COLORADO RIVER BASIN SALINITY CONTROL PROJECT, PUBLIC LAW 93-320, TITLE I

The President's FY 1991 budget includes a total of $14.295 million for work to complete the Yuma Desalting Plant and furnish plant equipment. Work will also begin on the Biocide Handling and Storage Facilities and on Fish and Wildlife Facilities. I support the President's FY 1991 budget proposal for this project.

COLORADO RIVER BASIN SALINITY CONTROL, PUBLIC LAW 93-320, TITLE II

The President's FY 1991 budget includes $22.838 million for continued construction of three salinity alleviation units authorized by Title II of Public Law 93-320, the Grand Valley and Paradox Valley Units and Lower Gunnison Basin, Stage 1, all in Colorado.

The Colorado River Basin Salinity Control Forum comprised of representatives of all of the seven Colorado River Basin states has carefully re-examined all of the features needed to control the salinity of the Colorado River and recommended in the Colorado River Basin Salinity Control Advisory Council Report a slightly higher appropriation for FY 1991 for construction of these units. However, in consideration of the current budgetary constraints, the Forum believes that the President's requested appropriation is sufficient to sustain progress on scheduled measures for salinity control and supports that appropriation. I fully concur with this recommendation of the Colorado River Basin Salinity Control Forum.

GENERAL INVESTIGATION PROGRAM

The President's FY 1991 budget for general investigations includes $200,000 for a new study to be cost-shared between the state of New Mexico and Reclamation. The object of the study will be to update water resource and related data by hydrologic unit within the state.

The President's FY 1991 budget includes $935,000 for general investigations and plan formulation for additional units of the Colorado River Water Quality Improvement Program in the Colorado River Basin. The proposed budget would include studies of the Price San Raphael Unit (Utah), the San Juan River Unit (New Mexico), and the Glenwood-Dotsero Unit (Colorado), plus non-point salinity source investigations and overall program cost effectiveness.

I support the President's FY 1991 budget proposal for both of these general investigation items.

OPERATION AND MAINTENANCE PROGRAM

I support the President's FY 1991 budget for operation and maintenance of the following Bureau of Reclamation projects in New Mexico and adjacent states in which New Mexico has an interest:

1. Brantley Project, $258,000;
2. Carlsbad Project, $38,000;
3. Middle Rio Grande Project, $7,279,000;
4. Pecos River Basin Water Salvage Project, $270,000;
5. Rio Grande Project, $3,639,000;
6. Closed Basin Division, San Luis Valley Project, $1,601,000;
7. Grand Valley Salinity Control Unit, $295,000;
8. Paradox Valley Salinity Control Unit, $160,000.

The opportunity to present this statement in support of appropriations for the Bureau of Reclamation for FY 1991 is sincerely appreciated.

STATEMENT OF JOHN E. MURPHY
PRESIDENT, ANIMAS-LA PLATA WATER CONSERVANCY DISTRICT
before the
Subcommittee on Energy and Water Development
of the
United States House of Representatives
April 4, 1990

I am John Murphy, President of the Board of Directors of the Animas-La Plata Water Conservancy District, a former Mayor of the City of Durango, and a life-long resident of southwest Colorado. It is my privilege to appear before this committee to request the full funding of $13.4 million for the Animas-La Plata Project.

The Animas-La Plata Water Conservancy District will administer Project facilities within its boundaries and will share in the overall administration of the Project. We are anxious that the Project move ahead toward its fundamental objective: an adequate, dependable, soundly managed supply of much-needed water for the people who have waited so long for this Project to materialize. The appropriation requested in the President's budget of $13.4 million will help this project to materialize.

The voters of the Animas-La Plata Water Conservancy District voted overwhelmingly in support of the repayment contract between the District and the Bureau of Reclamation. In the heart of the agricultural dryland of the District, the vote was three to one in favor of the Project. The dryside farmers in La Plata County are convinced of the merits of the Project. In our dry area unless we capture the spring snow runoff from our mountains and store it in reservoirs, such as the Animas-La Plata Project's Ridges Basin Reservoir, for prudent use during the dry summer months, farmers cannot hope to thrive.

Additional water storage is needed for La Plata County's present and future residents and for its thousands of tourists. Durango is the center of a rapidly expanding recreation industry and the focal point of many archaeological undertakings. Growth in La Plata County is a reality. People come to our area because of the quality of life and great recreational opportunities. This population growth engenders the critical need for a stable and known supply of water both in municipal and outlying areas. The Animas-La Plata Project is the long awaited answer to our much-needed municipal water supply.

The Animas-La Plata Project is to provide 41,700 acre-feet of municipal and industrial water to southwestern Colorado. Of this amount, Durango and the immediate surrounding communities will receive approximately 6,700 acre-feet. Small wonder, therefore, that the Durango City Council unanimously approved a letter of intent to participate in the Project.

The Animas-La Plata Project represents stability for the economic life in La Plata County. Presently, many of our children are forced to leave this area to find work elsewhere because there are not enough jobs locally. The Project, after completion, will supply jobs to both Colorado and New Mexico. The increase in jobs will also have a multiplying effect. La Plata County is heavily dependent on tourism. Ridges Basin Reservoir will provide a much-needed water based recreation area in the heart of the county.

The people who live and work in southwestern Colorado will gladly tell you that we have long taken pride in our relationship with our Indian friends and neighbors and our neighbors in New Mexico. We are especially proud of what we have accomplished over the past several years to resolve our disputes over water. The jigsaw puzzle could not have been completed without all the pieces. We in Colorado were fortunate to have all the pieces.

We were fortunate that we had people totally committed to arriving at an agreement which is fair to Indians and non-Indians alike.

Therefore, on behalf of the Board of Directors of the Animas-La Plata Water Conservancy District, I turn to you with confidence that our long years of efforts in putting together this jigsaw puzzle will not be erased and that you will provide the full funding of $13.4 million for the Project.

Thank you very much for your attention and consideration.

STATEMENT OF LEONARD C. BURCH
CHAIRMAN, SOUTHERN UTE INDIAN TRIBE
before the
Subcommittee on Energy and Water Development
of the
Committee on Appropriations
United States House of Representatives
April 4, 1990

SUMMARY OF SPECIFIC ACTION REQUESTED:

Appropriation of funds recommended by the Administration for construction of the Animas-La Plata Water Resource Development Project in the state of Colorado.

Mr. Chairman and Members of the Committee:

I am Leonard C. Burch, Chairman of the Southern Ute Indian Tribe, of Ignacio, Colorado. On behalf of my tribal members, I am here to again request your consideration of the funding needed to construct the Animas-La Plata Project on schedule. I am delighted, Mr. Chairman, that for the first time in the long history of appearances by tribal representatives before your Committee, that we are asking only for that which the present administration requested in its fiscal 1991 budget, $13.4 million.

For many years, we have come before your Committee, Mr. Chairman, requesting additional funds, funds which were badly needed for the Animas-La Plata Project. Year after year, this Committee has been responsive to our needs and appropriated the additional money necessary to keep this project moving. We are now on the threshold of an irreversible construction start. The administration has recognized the importance of the Animas-La Plata Project by asking the Congress to appropriate the required $13.4 million in construction funds. We ask that your committee concur with the President and appropriate $13.4 million for the Animas-La Plata Project.

The Southern Ute Indian Tribe needs the Animas-La Plata Project for water for agricultural and industrial use. Our future as a tribal entity depends on the availability of water in sufficient amounts to enable us to develop what lies on and under the lands allotted to us. Only by making productive use of our resources can we achieve the level of economic independence and self-sufficiency so frequently urged as the ultimate objective of the United States Government.

We look to the Animas-La Plata Project as the Tribe's surest means of making the needed additional water available. The Animas-La Plata Project resolves not only the Tribe's water rights claims, but also a broad range of water problems, including water augmentation for projected municipal growth and the shortage of irrigation water of our non-Indian neighbors. The Animas-La Plata Project has been carefully studied and analyzed over the years. The Project is main feature in our Water Settlement Agreement which is widely used as an example of the cooperative resolution of tribal and non-Indian water claims.

In addition, Mr. Chairman, our Tribe would like the Committee to consider a write-in request of $300,000 for repair and reconstruction of Capote Lake Dam on the Southern Ute Indian Reservation under the provisions of the Dam Safety Program. Our water rights in Lake Capote were recognized in the Colorado Ute Indian Water Rights Settlement Agreement, which was confirmed by the United States Congress in PL 100-585. In compliance with the provisions of the Agreement, the Colorado State Engineer inspected Lake Capote Dam and issued a dam safety warning to the Southern Ute Indian Tribe regarding this structure. The State Engineer cited numerous defects which if not corrected could constitute a significant hazard to the health and safety to people and property located downstream from the dam structure. The Southern Ute Indian Tribe was not unaware of the problems connected with Lake Capote Dam until the inspection. For several years the Tribe has requested that the Bureau of Indian Affairs provide funds to rehabilitate Capote Dam. Because the State of Colorado has issued a safety warning, the Tribe feels that it is urgent that the reconstruction be accomplished as soon as possible. We would therefore appreciate your Committee's consideration of a special write-in of $300,000 for this reconstruction project.

Our sincere thanks to you, Mr. Chairman, and to the Members of the Committee for your continued support of the vital Animas-La Plata Project which means so much to so many people in southwestern Colorado and northwestern New Mexico, Indian and non-Indian alike. The citizens of southwest Colorado, Indian and non-Indian, have always relied on the invaluable assistance of this Committee in resolving our water problems. Our reliance has never been misplaced.

STATEMENT OF PAT GREER
MEMBER OF THE BOARD OF DIRECTORS OF THE ANIMAS-LA PLATA WATER CONSERVANCY DISTRICT

before the
Subcommittee on Energy and Water Development
of the
United States House of Representatives
April 4, 1990

I am Pat Greer, a member of the Board of Directors of the Animas-La Plata Water Conservancy District, and a life-long resident of southwestern Colorado. I urge your support for the President's budget request of $13.4 million to begin construction of the Animas-La Plata Water Resource Development Project.

I am a drysider. I live and farm in the semi-arid region to be served by the Project. I look forward to receiving water, together with my Indian neighbors, from the Animas-La Plata Project. I am as aware as anyone of the difference irrigation will make in my ability to produce a living from my land.

Farmers in La Plata County have seen potentially bumper harvests deteriorate to nothing because of erratic rainfall and lack of irrigation. Access to irrigation water from the La Plata River is limited to the first few months of the growing season. As early as April in real dry years the La Plata River either dries up or is on call to meet the Interstate La Plata River Compact with New Mexico. The result is that unless there is a chance rain storm, our flourishing crops wither for lack of water.

Our soil is rich and will support valuable crops, but without a reliable water supply we are limited to the farming methods practiced by the earliest settlers. Engineering studies indicate that the existing conditions can be overcome with a water storage project to meet our water needs from late summer to early fall. The Animas-La Plata Project, when fully operational, will enable us to capture and store water when it is plentiful, and distribute and use it during times of shortage.

I was one of the first dryside farmers to sign a petition for allocation of water from the Animas-La Plata Water Conservancy District. The Animas-La Plata Project is our best hope to make the dryside the kind of farm land we need in our part of the country. We cannot, however, build this Project without federal assistance. We, therefore, repeat our pleas of other years that you help provide us the means of making the best of our fertile soil.

The Animas-La Plata Water Conservancy District is one of the signatories of the Final Settlement Agreement to satisfy the water rights claims of the Southern Ute and Ute Mountain Ute Indian Tribes through the construction of the Animas-La Plata Project. We were proud to have been a part of this settlement to achieve the common good. Without this negotiated settlement of the reserved water rights allocations for the Tribes, we would have been at loggerheads with our Indian neighbors over water. All parties recognize that by building the Animas-La Plata Project there will be sufficient water to allow growth and prosperity throughout southwest Colorado for Indians and non-Indians alike.

I have been neighbors with the Indian people all my life. We have always gotten along and we have always kept our word to each other. If other Indian Tribes are going to be asked to sit down and negotiate in good faith to reach settlement agreements, they must have the assurance that once those bargains are struck, Congress and the administration will keep their word. I hope you will do just that and provide the $13.4 million needed to keep the Animas-La Plata Project on a 12-year construction schedule.

I thank you for giving me the opportunity to express my support for the Project.

STATEMENT OF FRED V. KROEGER
PRESIDENT, SOUTHWESTERN WATER CONSERVATION DISTRICT OF COLORADO
before the
Subcommittee on Energy and Water Development
of the
Committee on Appropriations
United States House of Representatives
April 4, 1990

I am President of the Southwestern Water Conservation District of Colorado. I am pleased to again present testimony before this Committee requesting consideration of funding for the Dolores and Animas-La Plata Water Resource Development Projects in southwestern Colorado and northwestern New Mexico. We are requesting the Committee's consideration of $49 million in construction funds for the Dolores Project and $13.4 million for the Animas-La Plata Project. Both of these amounts have been requested by President Bush in the budget he submitted to the Congress earlier this year. We are delighted, Mr. Chairman, that for the first time the President's budget request includes funding for the Animas-La Plata Project which is sufficient to keep the project on its twelve-year construction schedule. That construction schedule is required if the United States Government is to meet its commitment to the Colorado Ute Indian tribes under the provisions of the 1988 Colorado Ute Indian Water Rights Settlement Act, Public Law 100-585.

As you know, Mr. Chairman, construction of the Animas-La Plata Project will enable the United States Government to fulfill its commitment not only to the Colorado Ute Indian tribes but also to the other citizens of southwestern Colorado and northwestern New Mexico. The project was authorized in 1968 to assure municipal, industrial and irrigation water to our area for completion concurrently with the Central Arizona Project.

With full funding for the Project, as requested in the President's budget, we will be able to move full speed ahead on the project.

In my opinion, the Animas-La Plata Project exemplifies the best of Bureau of Reclamation, multiple-use water resource development projects. Not only does this project provide for the settlement of the Colorado Ute Indian tribes' reserved water rights claims, the project provides needed agricultural water for the non-Indian communities of southwestern Colorado, provides a stable domestic supply of water for cities in Colorado and New Mexico, and provides vital economic development potential for the area through the creation of new jobs and the creation of a major recreational reservoir.

The Colorado Ute Indian Water Rights Settlement Act is now considered a hallmark in the negotiation and equitable settlement of Indian water claims. I cannot over-emphasize, Mr. Chairman, the good that has been accomplished by the passage of this legislation. It would be tragic, indeed, if the commitments contained in that legislation, including a 12-year project construction schedule, were not fulfilled and the agreement were dissolved. Appropriation of the $13.4 million requested by the administration will enable the Bureau of Reclamation to maintain that 12-year construction schedule.

Thank you for your assistance in the past and your consideration of our current request.

WATER RESOURCES CONGRESS
3800 N. Fairfax Drive, Suite 7
Arlington, VA 22203
703/525-4881

CHALLENGE 2000
WATER RESOURCES CONGRESS
ANNUAL MEETING
New Orleans, Louisiana, May 6-9, 1990

STATEMENT OF

LTG J. W. MORRIS, USA (RET)
CHAIRMAN OF THE BOARD OF DIRECTORS
WATER RESOURCES CONGRESS

BEFORE THE
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
COMMITTEE ON APPROPRIATIONS

HOUSE OF REPRESENTATIVES
CONGRESS OF THE UNITED STATES

REGARDING FISCAL YEAR 1991 APPROPRIATIONS
FOR WATER RESOURCES DEVELOPMENT

MARCH 27, 1990

I am John W. Morris, Chairman of the Board of Directors of the Water Resources Congress, an eighty-eight-year old association whose primary mission is the support of wise water resource development and management across the Nation.

I have appeared before this Committee on previous occasions testifying in support of the Civil Works program of the Army Corps of Engineers. But military or civilian, my interest continues to be focused on where we are heading in the pursuit of water project formulation, construction, operation and maintenance

Our membership works tirelessly in support of river basin developments of the Corps of Engineers and the Department of the Interior's Bureau of Reclamation. While time does not permit a recital of project by project listings and the funds needed to push them along to completion, there are three programs underway that deserve the continued attention of this Committee --flood control, transportation, and irrigation.

Flood control, which for many years was the battle cry of Water Resources Congress, continues be a most sought after improvement in the struggle over Nature's deluges from rain and snow melt. WRC joins the Corps of Engineers in supporting and seeking funds for flood control projects from the West Coast to New England and from our northern states to the deep south.

We appreciate the support of this Committee in its efforts to modernize our important navigation system by funding for much needed locks and dams on the Mississippi, Ohio, Monongahela and Columbia rivers. And, of course, we applaud your staunch support of the Tennessee-Tombigbee Waterway in its new status as an operation and maintenance project.

The Mississippi River and Tributaries projects on which Water Resources Congress cut its eyeteeth, has been a long-time account on your books, and one which has paid rich dividends in flood control and navigation over the past many years.

Bureau of Reclamation projects in Western states also have the approval and backing of Water Resources Congress. Notable by its absence in this agency's budget is the Garrison Diversion Unit in North Dakota. Once again the stepchild of the Pick-Sloan Plan is being pushed to the brink of starvation for lack of funds. Were it not for this Committee's care and feeding the Garrison Diversion Unit would be a footnote in the history of the Missouri River Basin Development.

The Garrison Diversion Unit, runt of the Pick-Sloan litter, was authorized under the Flood Control Act of 1944. Many projects in the Class of 1944 have been built and in operation for more than 30 years.

Permit me to quote from a news release issued by the Missouri River Division office of the Army Corps of Engineers. "The outlook for relief from the drought is not optimistic...For all practical purposes, there is no snow on the plains in the upper basin. The mountain snowpack above the Fort Peck and Garrison projects in Montana and North Dakota is below normal for this time of the year...The lack of snow coupled with the depleted soil moisture in the upper basin points to a continuation of the drought..."

This release was issued a little over two weeks ago. So drought is still with us. What more evidence do we need that the Garrison Diversion Unit should be built. Two ingredients to help alleviate a drought are stored water for municipal and agricultural uses and a delivery system to move the water. The stored water is in North Dakota behind Garrison Dam, and has been for many years. What has been needed for so long is the delivery system.

I urge this Committee to complete this project. Irrigation is an old practice but not old fashioned.

As we look ahead, we are reminded that the nature of water resources development and management has changed markedly over the years. Issues and challenges are crystallizing, now that the landmark Water Resources Development Act of 1986 has had three years of implementation, and that it appears reasonable to assume there will be authorization acts every two years, after a 16-year hiatus. The broad issues facing our Nation today include the need for total urban water management; a rational wetlands policy; river corridor management; conservation of water and related land resources; regional drought management; fish and wildlife mitigation policy; reservoir storage for water quality control; the need to improve Federal emergency storm damage relief; groundwater contamination and irrigation programs and policy.

To confront these problems, WRC has developed a platform of issue-based objectives to influence this Nation's water policy as we approach the next millennium. We call this platform "Challenge 2000."

My testimony therefor relates to not only the interests of this committee, but also to the public works authorization committees in both houses. WRC has national, regional, state, local and specific project concerns, where those projects are symptomatic of a larger problem. Some specific project concerns which I shall mention as examples of broader issues include:

- o Waters Bluff Reservoir, Texas
- o Two Forks Reservoir, Colorado
- o Big River Reservoir, Rhode Island
- o The Garrison Diversion, North Dakota
- o Upper Mississippi Navigation Improvements
- o Missouri River Mainstem Reservoir Management
- o Lake Sidney Lanier, Georgia, Storage Re-allocation
- o Freshwater diversion projects in Louisiana
- o The Everglades in Florida
- o Cape Fear River Improvement, North Carolina

The first two projects on this short list, Waters Bluff and Two Forks are not being funded by the federal government, and therefor may not be of direct interest to this committee; but they have been stopped or delayed in a manner which has wasted federal dollars, including those that you have appropriated to the Corps' regulatory program.

The remaining projects are major examples of the need to increase funding levels for water resources development and management. WRC encourages you to increase funding by a substantial amount for those projects which add storage or improve operational efficiency, such as the Garrison Project.

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The drought of the 1980's, and particularly 1988, especially in the southeast, have not been understood or appreciated adequately. You are aware of the growing controversy over the proposed reallocation of storage in reservoirs in the Atlanta region (e.g., Lake Sidney Lanier); a multi-state problem. Should drought conditions such as 1988 strike after another 20 years of growth, the consequences could be catastrophic. The point is that we should invest now, or we certainly will pay later.

That brings me to an item in the Corps' budget request; namely, the National Water Resources Management Study under General Investigations. WRC believes that study should be greatly expanded to respond to the intent of Congress, as expressed in Sections 707 and 729 of WRDA '86. The justification data and the Corps' plan of study simply do not do justice to the intent. We believe it is critical that funding be increased for this study and that the Corps be given directive language to expand the study's scope. The Corps is doing an excellent job in pursuing this study, given the prescribed limitations. If adequately funded and aggressively pursued, the study should pinpoint those regions and urban areas in critical need of total water management. Total water management in urban areas is especially important to America's future. WRC believes that federal investment in this aspect of America's water future is a fundamental need.

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Several of the projects I have listed involve the wetlands controversy; or perhaps I should say, the "no-net loss of wetlands" concept. The WRC membership is extremely concerned about this issue, and we believe it affects this committee directly.

The President's avowed goal of "no-net-loss of wetlands" is based on objectives which WRC supports, but which we pragmatically believe will be unachievable even with massive investments which the federal government cannot presently afford. The Corps and other agencies budget requests in this regard are woeful. WRC anticipates that $1,000,000,000 per year could become necessary to confront the problem. A good place to start would be increased funding to accelerate freshwater diversion projects in coastal Louisiana, and to increase federal support of efforts to protect and rehabilitate the Everglades.

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One root cause of the wetlands controversy is the Clean Water Act, especially, Section 404. The deficiencies of the

Clean Water Act are probably already of concern to this committee. Many decisions to not proceed with particular projects come far too late in the planning, engineering, and design process; after millions of dollars of federal investment in the studies. Particularly, Section 404c of the Act gives the Administrator of the Environmental Protection Agency power to veto projects after years of study and coordination. Examples are the Two Forks reservoir project in Colorado, and the Corps' Big River reservoir project in Rhode Island.

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There also are navigation studies and projects which WRC believes should be accelerated to achieve maximum economic return to the Nation. These include the Cape Fear River, North Carolina, navigation improvement project, now being evaluated by the Corps of Engineers; the inland waterways projects recommended for acceleration by the Inland Waterways Users Board, which WRC strongly supports; also, WRC believes that funding for studies by the Corps of navigation problems on the Upper Mississippi River and the Illinois River are critical to a clear understanding of the challenges facing the Inland Waterways Trust Fund. WRC commends the Corps for its analyses and projections of the trust fund's status; but, the Corps is extremely handicapped by lack of adequate funding to support system wide management of this economically vital segment of our infrastructure.

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Interstate water supply problems are excellent examples. Clearly, there should be federal interest in resolving such problems, and federal statutes allow federal participation; yet administration policy relegates these problems to non-federal entities.

Another example of lack of "federal interest" is outdoor recreation. Many beach restoration, and other, projects generate significant net National Economic Development" (NED) benefits in terms of savings in transportation and other cost. Yet again, current Administration policy relegates projects dependent upon recreation benefits to non-federal interests.

A last example is water quality control. During the 1960's federal agencies included storage in reservoir projects to make minimum releases to improve water quality during periods of extreme low flow. Inclusion of water quality storage was based on recommendations of the Environmental Protection Agency. For reasons unclear, EPA opted over a decade ago to no longer recommend the inclusion of water quality storage in federal reservoirs. The popularly attributed reason was that the solution to pollution is not dilution; But that is wrong. In fact dilution is highly desirable for a variety of factors, including increased waste assimilation and improved oxygenation. These attributes can be very beneficial in offsetting the effects of non-point pollution and can be valuable reserves in times of extreme drought.

Even though cost-sharing has been stipulated in the law for cases such as the above, present Administration policy does not allow federal participation. Moreover, in those few cases where there is a federal interest, the strict up-front financing requirements discourage state and local investment in projects of National economic importance.

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WRC is concerned that both Congress and the Administration recognize the criticality of water resources management and development. Water is our most precious resource. We ask that this committee carefully consider the problems we have outlined above in your deliberations.

DEUTSCH

2444 Wilshire Boulevard, Suite 600 • Santa Monica, California 90403 • (213) 453-0055 • Fax (213) 453-6467

March 29, 1990

The Hon. Tom Bevill
Subcommittee on Energy and Water Development
2302 Rayburn Building
Washington, D.C. 20515

Dear Congressman Bevill:

We presented this Committee with a plan for construction of the San Luis Rey River Channel last year, supported by Dr. Howard Chang, our hydrologist and Dr. Don Bright, our biologist. This plan saved the taxpayers buying 250 acres of land, saving in excess of $10,000,000 and was superior both hydraulically and biologically. I never heard from the House Subcommittee, but I did from David Gwaltney of the Senate Subcommittee. As near as I can quote, Mr. Gwaltney could find nothing wrong with our plan, but could not approve it because of a consultation delay. Since last year the City Council of Oceanside has approved our plan and wants to use it, provided it will not cause a delay.

Now a new cause for delay has come about as a result of excessive sand mining. Without taking up your time with the problem caused by the sand mining, let me give you a quick and easy solution that can take care of everything. The San Luis Rey Channel is necessary for flood protection. The most dangerous and vulnerable spot along the river is a residential area called Los Arbolitos, about 4,000 residents, according to Mayor Bagley.

A simple effort of building a 3,000-ft. levee between Pilgrims Creek and the Fireside Channel will protect the residents. The U.S. Fish & Wildlife Service's objection is the necessity of granting to the U.S. Corps of Engineers the rights to go through three acres of willows, a distance of about 400 ft. of the 3,000 ft. needed right now, without waiting for the new trees to grow in their place. The U.S.F.W. requires that new trees be planted, reach the age of three years, before the present trees can be removed.

This construction can start in September and be finished in December. During this period the U.S. Army Corps of Engineers, U.S. Fish & Wildlife, City of Oceanside, and the property owners along the river should be able to work out all their problems.

I understand an appropriation of $5,500,000 has been provided in this year's budget. The cost of this 3,000 ft. levee cannot exceed $450,000 - and provides more safety to lives and property today than the rest of the channel combined.

We would like this Committee to assist in this matter by helping to obtain permission from U.S.F.W. for the immediate removal of these willows, without waiting for the new trees to reach three years of age. While this is being carried out, we can all work together as previously stated and save the taxpayers at least $10,000,000.

Respectfully,

Alex Deutsch

Alex Deutsch

TESTIMONY OF H. LEIGHTON STEWARD
PRESIDENT, CHIEF EXECUTIVE OFFICER, AND
CHAIRMAN OF THE LOUISIANA LAND
AND EXPLORATION COMPANY AND
CHAIRMAN OF THE NATIONAL WETLANDS COALITION
BEFORE THE
SUBCOMMITTEE ON WATER RESOURCES
OF THE HOUSE OF REPRESENTATIVES
COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION
HEARING ON
WETLANDS POLICY ISSUES

MARCH 13, 1990

Mr. Chairman, I appreciate the opportunity to address the Water Resources Subcommittee today. My name is H. Leighton Steward. I am Chairman, President, and Chief Executive Officer of The Louisiana Land and Exploration Company (LL&E). I am appearing before you today as Chairman of The National Wetlands Coalition.

The Coalition was formed in September, 1989. Our membership includes a geographically and economically diverse group of companies and governmental entities, all of whom share common interests in future policies affecting wetlands management. We formed The National Wetlands Coalition in the hope of making a constructive contribution to the efforts of the Administration and the Congress to develop a comprehensive plan for intelligent, practical and environmentally sensitive management of the Nation's wetlands.

The diversity of the Coalition's membership underscores the importance of the wetlands issue to the Nation. Our public sector members are engaged in water supply, power, port and airport development activities. Our private sector members include major landowners, energy companies, electric utilities, Alaska native corporations and commercial developers. Long before the recent public attention to wetlands protection issues, some of our members had been actively involved in the development of innovative wetlands protection projects and initiatives. For example, my own company, LL&E, owns over 600,000 acres of coastal wetlands in Louisiana. This area of Louisiana is the victim of massive erosion and subsidence, an alarming circumstance that is now beginning to unify leaders in the public and private sectors in Louisiana in a common effort to save these wetlands. My company has been a leader in the efforts to save our Louisiana wetlands. Since 1954, LL&E has constructed over 400 water control structures to slow the adverse impact of nature and man on this precious resource.

My personal interest in the wetlands issue has arisen as a result of LL&E's unique position as a landowner and steward of a substantial portion of Louisiana's coastal wetlands. LL&E is proud of its record as a leader in private sector efforts to manage wetlands and to set high standards of creativity in projects to restore our wetlands base. Other Coalition members have displayed their commitment to wetlands conservation through the implementation of innovative mitigation practices for development activities and by a general acceptance of responsibility to undertake development activities in an environmentally sound manner.

ESTABLISHING A NATIONAL WETLANDS POLICY

The National Wetlands Coalition believes that the establishment of a sound and comprehensive wetlands policy should be a high national priority. Our Nation's wetlands contain vital natural resources that yield a wide range of important environmental and social values. Among other things, wetlands can be high value plant and animal habitat, can be important to the maintenance of water supply and quality, and can provide unique recreational opportunities. At the same time, three of every four acres of the Nation's wetlands are privately owned. And, a very large percentage of our population lives on or near wetlands or other aquatic resources, and depends upon the use of those resources. For instance, under the Federal delineation manual, about 53% of Louisiana appears to be a wetland and over 2 million of our citizens live in these areas. As a result, claims for economically productive use of wetlands will continue to be made, to sustain our human population and to realize our society's economic, social and recreational goals.

If only a small portion of these claims for use of our wetlands resources were valid, then effective wetlands management would be simple. Policy makers would simply pick out the few "good uses" and prohibit the rest. However, the reality is that wetlands, and the Nation's water resources generally, are vital to maintaining a healthy and thriving environment, vital to sustaining human life and activity, and necessary to the continued efforts of both the public and the private sector to provide jobs, social services, recreation and other important social benefits.

As a result, the task of fashioning a sensible and genuinely effective program for long-term conservation and management is as challenging as it is important. The Coalition is here today to offer its commitment to work with the Congress as well as with the Administration in devising a national wetlands policy that fairly accommodates society's competing needs for continued economic use of some wetlands and conservation of environmental values associated with wetlands and aquatic resources.

ISSUES TO BE ADDRESSED

The Coalition believes that to accomplish the overall goal of sound wetlands management, Federal policy initiatives must address four general categories of issues. The Coalition has established task forces to develop specific proposals in each of these areas:

1. Definition of the national goal of "no overall net loss of wetlands";

2. Creation of meaningful incentives for private sector participation in wetlands conservation and restoration activities;

3. Reform of the wetlands regulatory process, including the section 404 permitting process; and,

4. Development of mechanisms to fund wetlands programs.

The work of these task forces will enable us to respond constructively to the efforts of the InterAgency Task Force and the Congress in attempting to devise policies that will effectively address these issues.

THE EPA-CORPS MEMORANDUM OF AGREEMENT

Before describing the issues of primary concern to the Coalition, I would like to address briefly the Memorandum of Agreement between the Corps of Engineers and the Environmental Protection Agency on mitigation procedure and policy (MOA), which I know is of concern to the Subcommittee. The MOA has occupied center stage in the wetlands debate during the recent months. The effect of this attention has been both good and bad. Its ill effect, we think, has been to intensify antagonisms unnecessarily over the single issue of mitigation policy and, indeed, over certain narrow aspects of mitigation policy under the section 404 permitting program. Mitigation policy is obviously an important element in the overall debate of wetlands management and protection. The Coalition feels very strongly that creative and cooperative efforts in fashioning mitigation objectives and in designing specific projects are essential to the implementation of a national wetlands policy. We believe that mitigation can be a very positive tool to ensure careful and well conceived requirements for development activities in wetlands.

However, certain substantive aspects of the MOA limit administrative flexibility to devise project requirements that fairly balance the multitude of factors involved when the Corps determines the circumstances under which activities in wetlands may appropriately be undertaken. Tough standards to protect truly valuable wetlands are appropriate in many circumstances. On the other hand, if inflexibly applied, these standards can defeat truly useful projects in less valuable wetlands areas, increase costs unreasonably, and result in the "protection" of lands that offer little in the way of true environmental values.

We have been, and continue to be, concerned that the sequencing requirements under the MOA will be implemented by the Corps and the EPA to discourage intrusion into any and all wetlands, regardless of the actual impact on the values and functions of the wetland, the value of the wetlands itself and without meaningful regard to the potential for compensatory mitigation to offset these impacts. We also have expressed concern with the failure to recognize the need for special rules or compensatory mitigation in Alaska or other regions of the country where the concentration of wetlands is high and the need and opportunity for compensatory mitigation is not always demonstrated. While the final modifications to the MOA set a tone of increased flexibility, we believe that the policies reflected in the MOA require a careful re-examination in the context of the InterAgency Task Force's effort to define a national wetlands policy.[1]

Our greatest concern with the MOA was the process by which it was adopted. We agree that the private sector bears a substantial responsibility for developing a reasonable national mitigation policy. However, the failure to proceed by notice and comment foreclosed the private sector and many agencies of government from attempting to play a constructive role in the development of that policy. Perhaps most importantly, the failure to provide for meaningful and open public comment created substantial concern that no effort would be made to consider the public's view as the Administration moves toward the development of proposals to implement the "no net loss" goal. While we recognize that the MOA is not, of itself, the means for implementing the President's "no net loss" goal,[2] it is clear that Federal mitigation is one very important piece of the wetlands policy puzzle. A flexible, cooperatively developed mitigation program can be very effective in encouraging private sector inventiveness and participation in wetlands restoration activities and can set national standards for conducting economic activities in an environmentally sound fashion.

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[1] In an effort to advance the Subcommittee's consideration of these issues, I have attached to our testimony the comments prepared by the Coalition for submission to the President and other Federal officials involved in the discussions over implementation of the MOA. These comments may be useful to you as you develop a national program for implementing the "no net loss" goal.

[2] As a practical matter, given the limited jurisdictional scope of section 404, and the fact that so much of the Nation's wetlands are in private ownership, it is unreasonable to conclude that adopting even the most restrictive regulation under the 404 program will do much to alter the current trends in wetlands loss.

This leads me to note the beneficial aspect of the recent controversy surrounding the MOA. In our view, there is now an increasing recognition among Federal policy makers of the need to come to grips with these difficult issues in a responsible, comprehensive way. We are particularly encouraged by the project to be undertaken by the Domestic Policy Council's InterAgency Task Force on Wetlands to undertake regional hearings and receive public comment on the implementation of the "no net loss" policy. We find this to be a much welcomed invitation to government, business and conservation groups to move toward wetlands conservation goals in a creative, cooperative, meaningful and coordinated fashion. The inquiry of this Subcommittee is another important step in advancing that goal. As this debate progresses, The National Wetlands Coalition is committed to coming forward with specific proposals for implementing this goal.

DEFINING "NO NET LOSS"

The phrase "no net loss of wetlands" has become a symbol of the need to develop a national strategy to stem the loss of environmentally important wetlands and encourage additions to that resource base. "No net loss" is at present a bare bones notion, and until we put some flesh on those bones, we are not sure what to say about whether or how "no net loss" can make good public policy sense.

In our view, "no net loss" of wetlands is a policy goal and an organizing principle that can serve as an impetus to the development of the specific policies and programs that must be crafted by the InterAgency Task Force and by the Congress. We do not believe that the starting point for an analysis should be the existing section 404 regulatory framework. Rather, we believe that there is a critical need for a fresh approach to wetlands conservation and management.

The work of the National Wetlands Policy Forum reflects an initial attempt to identify principles and proposals appropriate for consideration by the Congress and the Administration in defining the elements of a national wetlands policy. While our members do not necessarily endorse the findings of the Forum Report in all respects, we do believe that the Report was a productive and essential first step in attempting to devise a national wetlands policy. Many of the general principles articulated in the Report are useful points of departure in the Federal wetlands policy debate.

In particular, we believe that the Wetlands Forum Report has properly defined the framework for establishing a national wetlands policy. Briefly stated, the elements of the framework would:

-- establish a coherent national policy objective with respect to wetlands conservation and management;

-- emphasize planning to accomplish wetlands conservation and management;

-- increase private sector incentives;

-- modify wetlands regulatory programs to accomplish the combined goals of more effective protection and reduced regulatory costs and delays;

-- reduce wetlands alterations resulting from government programs;

-- improve the quality and quantity of available information about wetlands;

-- increase wetlands restoration and creation activity;

-- ensure adequate funding for acquisition and other wetlands programs.

While we agree that this is a useful framework, we also believe that several basic realities must be recognized if any progress is to be made in translating this framework into specific policies and programs. These realities are that:

1) over 75% of our Nation's wetlands are privately owned;

2) much of the Nation's population and much of our current economic activity occurs in wetlands areas; and,

3) not all wetlands are of equal value.

We do not raise these points simply to wave the banner of private property rights, but rather to identify the context in which the Administration and the Congress will be making policy decisions to implement a sound Federal wetlands program.

Given these realities, we do not believe that a sound national wetlands policy can proceed from the premise that wetlands conservation is presumptively inconsistent with multiple use. The current, wholly legitimate interest in wetlands protection appears to be creating a growing interest by some portions of the Federal government in setting aside wetlands from any and all development activities. In some instances this may well be necessary; some lands truly are so fragile and contain such high wetlands values and functions that development activities are unacceptable. When such lands are identified, they should be publicly acquired or landowners should otherwise receive fair compensation for the loss of the economic use of those lands. In most cases, however, this approach is neither economically tenable nor environmentally necessary.

As an economic matter, the cost of wholesale limitations on development in all wetlands -- both the cost of acquisition and the loss of economic productivity -- is considerably greater than our economy can or should absorb. The cost is certainly greater than Federal policy makers are likely to impose willingly upon an informed populace. However, unless this reality is faced, the current Federal budget constraints could encourage Federal policy makers to rely instead upon increased, stringent regulation to slow the threat of development. While this might create some short-term comfort that the cause of wetlands protection is being advanced, the fact is that the current regulatory structure does not reach most activities in wetlands, such as the drainage of wetlands. Using regulation solely as a device to halt development only defers the cost because, eventually, landowners deprived of all meaningful development rights will seek and receive compensation in the courts. As a consequence, not much will be meaningfully accomplished unless substantial effort is directed at managing the resource and accommodating multiple uses where possible in an environmentally sound fashion.

It is also important to recognize that this latter policy approach is not dictated solely by economic considerations. To the contrary, there is a growing base of experience that this course of action is entirely consistent with the overall goal of strengthened wetlands protection. In many instances, economic activity subject to careful environmental regulation can be undertaken in wetlands without a sacrifice of the values and functions we seek to conserve. Properly conducted, oil and gas operations, which involve only minimal and often temporary alteration of the land, fall into this category. In addition, development activity that involves alteration of wetlands can also be designed to accommodate, and even enhance, existing values by improving habitat conditions in nearby wetlands, restoring degraded areas and using other creative mitigation techniques.

Moreover, there are very real benefits to be gained in distinguishing among wetlands of differing quality in determining the level of regulation to be imposed. The MOA is an instructive example of the problem that occurs when all wetlands are assumed to be created equal. To some extent, the MOA would permit the Corps to recognize a difference in wetlands quality in determining the kind of compensatory mitigation requirements to impose, after an applicant has gotten beyond the "avoidance" and "minimization" requirements. However, the sequencing requirement, including the requirement to avoid any wetlands impact if practicable, applies to all wetlands, regardless of their quality. Thus, an applicant must clear most of the same regulatory hurdles, regardless of the quality of the land he seeks to use. This is not simply an unnecessary regulatory burden. It is counterproductive. An applicant has little reason to choose a less environmentally sensitive site over one that is more environmentally valuable if the regulatory obligations are the same in both instances.

On the other hand, encouraging the private sector to rely upon compensatory mitigation when the values lost are less significant accomplishes more than just a "trade-off" of economic and environmental values. Encouraging the private sector to devise new, innovative mitigation methods and to devote private funds to improving the current state of the art in wetlands conservation, restoration and creation will add critical new knowledge that will be essential to achieving our long-term goal of actually enhancing the current resource base.

REGULATORY REFORM

The failure of the current system to provide incentives for meaningful wetlands conservation, and the much documented inefficiencies inherent in that system, lead the Coalition to conclude that the reform of the current regulatory structure is vital to the development of a sound national wetlands policy. The National Wetlands Policy Forum Report acknowledges the need for a streamlined regulatory structure and identifies a number of problems with the current section 404 program. However, the Forum Report did not undertake the very complicated and ambitious task of attempting to determine how that system might be changed to accomplish both the dual objective of rational resource management and increased administrative efficiency. We are very hopeful that the Congress will not conclude that the task is too difficult to undertake.

We believe that the problem with the current regulatory program is fundamental and derives from the simple fact that national policy needs and objectives have overtaken the program that was originally envisioned by the Congress. The administration of the Clean Water Act covers a number of activities and was designed by the Congress to protect a variety of water related resources. Over time, wetlands protection has been integrated into that original charge. But the process of integration has been contentious at its worst and awkward and complicated at its best.

What we have today is an elaborate regulatory structure that is in many respects quite different from the creature that Congress envisioned when the section 404 program was enacted. The states have not assumed a substantial part of the responsibility for regulation under the section 404 program, which was perhaps not contemplated by Congress. The division of responsibilities between the Corps and the EPA has been the source of uncertainty, delay, confusion and economic inefficiency. Recently a heightened interest in protecting wetlands and managing the use of water resources has aroused the EPA's more direct intervention in specific permit issues. As the threat of an EPA veto under section 404(c) at the end of a long and costly permit process becomes increasingly likely, the uncertainty inherent in the current system increases dramatically.

The issuance of the Federal wetlands delineation manual further complicates the current regulatory situation by vastly expanding the scope of the definition of wetlands in ways that many landowners, particularly farmers and others not now subject to regulation, find difficult to predict. In many areas this may expand the definition of activities subject to regulation beyond the scope that was intended by the Congress when these issues were initially considered. In a recent hearing by another Subcommittee of the Public Works and Transportation Committee, the Corps announced its intent to reconsider the use of nationwide permits which are, under the current legal regime, an important means for expeditious consideration of low-impact activities.

In some instances, the objective of these administratively undertaken reforms may be appropriate. On the other hand, the potential decision to make more and more activity subject to the section 404 program may have enormous consequences and should be determined by elected officials in a public forum. This is not to suggest that the Corps and the EPA will not make a valiant effort to sort through these difficult issues. However, a policy initiative of this consequence should not be accomplished by an increase in the regulatory limitations that are imposed under the section 404 program. Too much has changed since Congress established the section 404 program in 1972 to be comfortable with an administrative solution within the current statutory framework. Whatever the best efforts of the Corps and EPA may be, the program's administration today is crippled by the absence of clear legislative direction concerning the values that must be protected, the social objectives that must be accomplished, and by the lack of a clear administrative path for obtaining secure permitting decisions and obtaining consistent responses from all Federal agencies.

As the section 404 program becomes increasingly a vehicle for Federal land use regulation, as it clearly has, it is absolutely essential that the Congress look at its effect, scope and implementation. One of the major efforts of the Coalition will be to develop specific proposals for reform of the section 404 process that we hope will be among those considered by the Congress as its undertakes its review of Federal wetlands policy. We look forward to an opportunity to participate in efforts of the Congress to revise and rationalize the section 404 process.

CONCLUSION

In sum, the Coalition believes that Congress must devote its attention in the wetlands debate to two general issues. The first concerns the overall comprehensive goal of advancing the cause of sound wetlands conservation and management. We believe that Congress should pay special attention to the efforts of the President's InterAgency Task Force and, in particular, that members of Congress should also monitor the results of the Task Force's regional hearings in which the local consequences of and need for Federal wetlands policy will be examined on a regional basis. Critical to the success of that process is the development of broad-based regulatory and non-regulatory incentives for private sector participation in sound wetlands management. We believe that Congress should also press for a continued openness in the public process as all Federal agencies, including the United States Fish and Wildlife Service and others, begin to develop proposals for the implementation of enhanced wetlands protection and management.

Finally, and perhaps most importantly, we believe the Congress has a unique responsibility to re-examine the section 404 regulatory process against its original purposes, in light of the changed circumstances and competing public policy goals that now affect the implementation of that process. We believe that a public-private consensus in this area can be accomplished and that, indeed, no effective program can be implemented without substantial consensus that is the basis for any enacted legislative proposal. I emphasize again that the Coalition is committed to working with you constructively and cooperatively in this process. Thank you for your attention.

Attachment

OREGON NATURAL RESOURCES COUNCIL
MAIN OFFICE

YEON BUILDING, SUITE 1050
522 SOUTHWEST FIFTH AVENUE
PORTLAND, OREGON 97204
503-223-9001

*Protecting Oregon's lands,
waters and natural resources*

Wednesday, March 28, 1990

Senator Bennett Johnston
Energy and Water Development Subcommittee
Committee on Appropriations
US Senate
142 Dirksen Office Building
Washington, DC 20510

Representative Tom Bevill
Energy and Water Development Subcommittee
Committee on Appropriations
US House of Representatives
2362 Rayburn House Office Building
Washington, DC 20515

Gentlemen,

I am submitting for your consideration and inclusion in the official hearing record on the Fiscal Year 1991 appropriations bill a memorandum from the Commanding General of the North Pacific Division of the US Army Corps of Engineers regarding the partially constructed Elk Creek Dam in the Rogue River Basin of southern Oregon.

The memorandum and discussion paper that it accompanied are a damming indictment of the folly of the Elk Creek Dam project. I direct your attention especially to the handwritten notation by the general.

I am also enclosing a recent editorial by Oregon's largest newspaper on the subject.

ONRC urges the committees to delete any funding to continue this project.

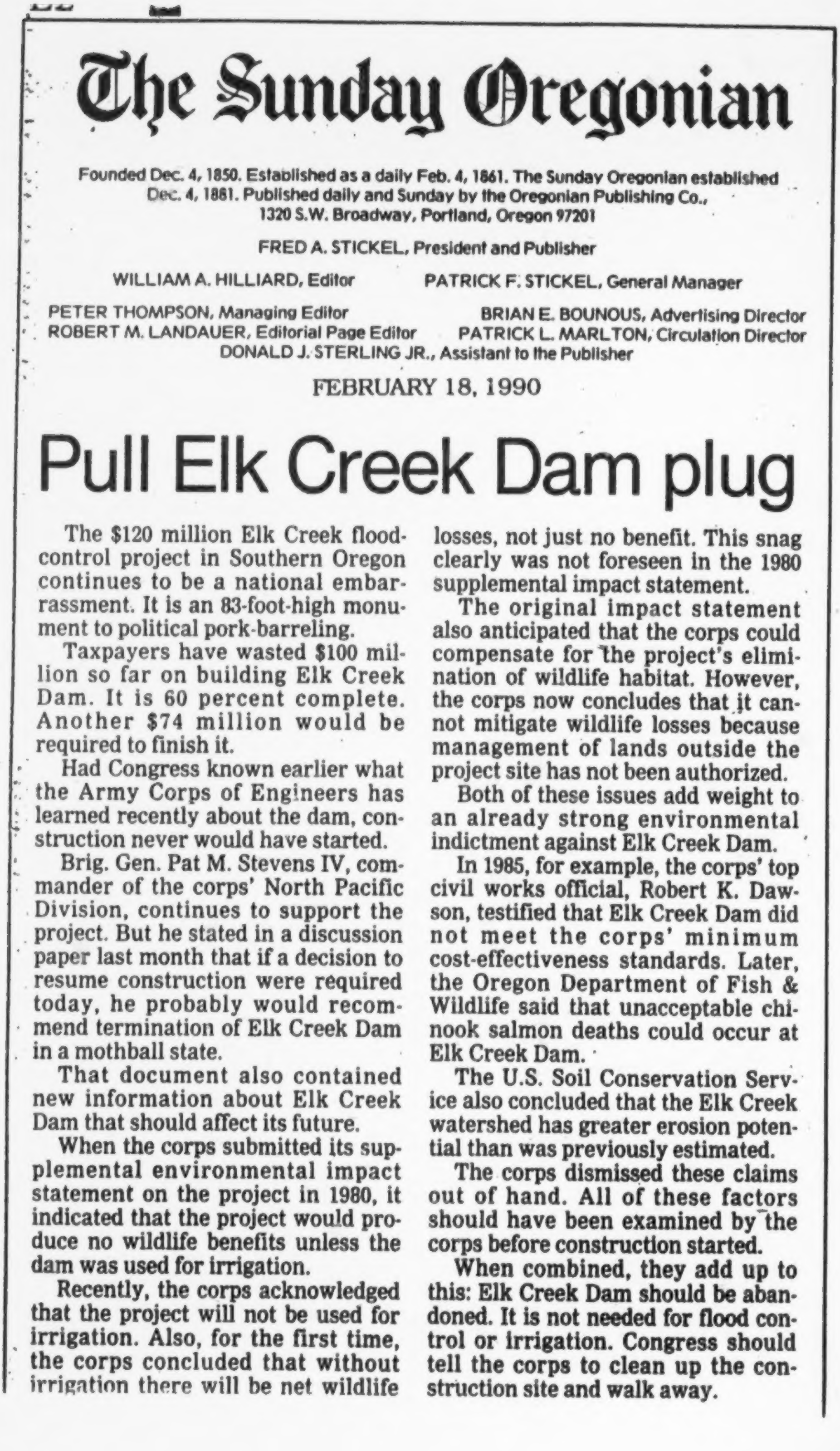
Thank you for your consideration.

Sincerely,

Andy Kerr
Director of Conservation

AK/sg
cc: Senator Mark O. Hatfield
David Conrad, National Wildlife Federation

Enclosures



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FEBRUARY 18, 1990

Pull Elk Creek Dam plug

The $120 million Elk Creek flood-control project in Southern Oregon continues to be a national embarrassment. It is an 83-foot-high monument to political pork-barreling.

Taxpayers have wasted $100 million so far on building Elk Creek Dam. It is 60 percent complete. Another $74 million would be required to finish it.

Had Congress known earlier what the Army Corps of Engineers has learned recently about the dam, construction never would have started.

Brig. Gen. Pat M. Stevens IV, commander of the corps' North Pacific Division, continues to support the project. But he stated in a discussion paper last month that if a decision to resume construction were required today, he probably would recommend termination of Elk Creek Dam in a mothball state.

That document also contained new information about Elk Creek Dam that should affect its future.

When the corps submitted its supplemental environmental impact statement on the project in 1980, it indicated that the project would produce no wildlife benefits unless the dam was used for irrigation.

Recently, the corps acknowledged that the project will not be used for irrigation. Also, for the first time, the corps concluded that without irrigation there will be net wildlife losses, not just no benefit. This snag clearly was not foreseen in the 1980 supplemental impact statement.

The original impact statement also anticipated that the corps could compensate for the project's elimination of wildlife habitat. However, the corps now concludes that it cannot mitigate wildlife losses because management of lands outside the project site has not been authorized.

Both of these issues add weight to an already strong environmental indictment against Elk Creek Dam.

In 1985, for example, the corps' top civil works official, Robert K. Dawson, testified that Elk Creek Dam did not meet the corps' minimum cost-effectiveness standards. Later, the Oregon Department of Fish & Wildlife said that unacceptable chinook salmon deaths could occur at Elk Creek Dam.

The U.S. Soil Conservation Service also concluded that the Elk Creek watershed has greater erosion potential than was previously estimated.

The corps dismissed these claims out of hand. All of these factors should have been examined by the corps before construction started.

When combined, they add up to this: Elk Creek Dam should be abandoned. It is not needed for flood control or irrigation. Congress should tell the corps to clean up the construction site and walk away.

FOR CENPP-PB Nisbett JRE 1/25

DEPARTMENT OF THE ARMY
NORTH PACIFIC DIVISION, CORPS OF ENGINEERS
P.O. BOX 2870
PORTLAND, OREGON 97208-2870

REPLY TO
ATTENTION OF:

CENPD-PL

MEMORANDUM FOR CDR USACE (CECW-ZA), 20 MASS AVE NW, WASH DC
20314-1000

SUBJECT: Elk Creek Lake Project

1. The enclosed issue paper is forwarded to alert you to the status of several issues which have bearing on potential resumption of the project, and which may affect project operation if it is resumed and completed.

2. First, it is clear that current budgetary selection criteria regarding project resumption can not now be met. Although the Corps new start criteria were not met, project construction was first initiated in response to appropriation language. Second, as a result of recent studies regarding physical and environmental effects of project operation, and in consideration of pertinent legislative authorities, it is now apparent that operation of the project as formulated and authorized may not be advisable.

3. The FY 91 budget does not technically impose a resumption* decision at this time. Nonetheless, the issues involved with the project are sufficiently contentious that regardless of whether a go/no-go decision can, or should be made now, we need to be discussing the issues within the executive branch, and soon disclosing them to the public and interested parties. Also, the FY 92 budget submittal will soon be upon us, and a decision will need to be made by that time.

4. Regarding FY 91 budget testimony, I recommend we maintain our posture for continuing engineering and design since we do not yet have the District Court orders relative to completing the NEPA process. We plan to continue studies and activities necessary to complete that process.

5. As follow-on to the enclosed issue paper, I suggest a CENPP/CENPD briefing for you and your staff prior to the budget hearings.

Encl

PAT M. STEVENS IV
Brigadier General, USA
Commanding

*were that decision to be required today, I suspect I would recommend not resumption, but termination in a "mothball" state.

FOR CENPP-PB Nisbett JRE 1/25/90

CENPD-PL
R1 22 Jan 90

ISSUE PAPER

ELK CREEK LAKE PROJECT, OREGON

PROJECT DESCRIPTION

The project is located at river mile 1.7 of Elk Creek, a tributary of the Rogue River in Jackson County, Oregon (Encl 1). When completed and operated for full authorized purposes, the 249-foot high roller compacted dam will impound a 101,000 acre-feet reservoir having 1,347 surface acres, at full pool.

The project was authorized by the 1962 Flood Control Act as part of the three-dam Rogue River Basin system to provide flood control, water supply, fish and wildlife enhancement, water quality control, recreation, and irrigation (Encl 2). Lost Creek and Applegate projects are completed and operating components of the system. A total of 95,000 acre-feet of usable storage is planned at Elk Creek. Lost Creek and Elk Creek as a unit was projected to provide water for irrigation of about 25,000 acres of land, of which about 19,000 acres would be new lands; provide 20,000 acre feet of stored water for future water supply; improve stream conditions to enhance the fisheries of Rogue River (Lost Creek); and reduce the peak stage of floods.

STATUS OF PROJECT CONSTRUCTION

Funds to initiate preconstruction planning were appropriated in FY 1965, and for construction in FY 1971. Construction was deferred in FY 1977 due to a lack of state support. Following reestablishment of state support, funds were appropriated in FY 1982 and FY 1983 to update and continue design, plans, and specifications. Via Congressional add, funds were appropriated in FY 1985 for construction of the main dam, but construction was halted by U.S. District Court injunction in August 1987 in response to a suit by an environmental group and has not been restarted. Presently, construction on the project remains stopped and resumption is not scheduled. The dam stands at 1/3 of its design height and Elk Creek is not impounded. The project is reported at 72% complete based on the status of the dam itself, plus completed relocations, fish trap (not used), quarried rock, etc.

ISSUES

There are several current issues germane to any course of action for resumption of project construction. These issues are briefly discussed below.

a. Irrigation

The irrigation outputs as presented in the project formulation do not appear to be needed in the reasonably foreseeable future. The requirements of the 1944 Flood Control Act have not been met, namely that USBR does not have an authorized irrigation project. At this time there is no support that irrigation storage at Elk Creek is needed, and an analysis showing that irrigation will result in NED benefits is not available. It is noted also that irrigation storage is presently available at the completed Lost Creek project.

b. Water Supply

Water supply needs are not apparent in the near future and there are no Elk Creek storage contracts for water supply. A small amount of M&I water is currently being purchased from Lost Creek project; additional needs could be provided by Lost Creek.

c. Recreation

Section 103 of PL 99-662 requires cost sharing on recreation facility development. At this time there is no non-Federal sponsor willing to meet cost sharing requirements. Provision of minimum facilities would allow only a small portion of the recreation benefits which would be realized by full facilities development.

d. Fish and Wildlife

The Lost Creek and Applegate projects are providing the fishery enhancement benefits for the three project system. With full operation of Elk Creek there may be some detrimental impact to Rogue River fisheries due to late summer releases. Summer releases to provide minimum flows in Elk Creek were requested by State and Federal agencies with full project operation, but may no longer be desirable. If the project can be operated with minimum or no storage pools, late summer releases can be avoided.

In authorized project formulation, Elk Creek was expected to provide wildlife benefits associated with irrigation development which were assumed to be offsetting of at-site project wildlife losses. Since there is now no irrigation attributable to Elk Creek, the project will result in net wildlife losses.

Mitigation of wildlife losses will not be achievable on project lands and will require off-project measures, which are not specifically authorized.

e. Operation of Project

Two factors have bearing on operation of the project once completed. The Appropriation Act of 1971 (PL 91-439) states "...the Elk Creek Reservoir Project in Oregon shall not be operated for irrigation purposes until such time as the Secretary of the Interior makes the necessary arrangements with non-Federal interests to recover the costs, in accordance with Federal Reclamation Law, which are allocated to the irrigation purpose..." Also, the U.S. Fish and Wildlife Service has requested through Fish and Wildlife Coordination Act procedures that an alternative pool level operation plan be implemented initially (i.e. less than full pool in order to reduce reservoir clearing requirements), "to delay the significant impacts of full pool operation until some time in the future when all authorized purposes would be needed and fully developed."

At this time it appears that flood control operation with either minimal storage for provision of minimum flows in Elk Creek, if still deemed necessary by the State of Oregon, or a "dry" reservoir are the most likely operational scenarios.

f. Court Injunction/EISS

The Oregon Natural Resources Council filed suit against the U.S. Government in March 1983 to halt construction of the project based on alleged violations of NEPA. In June 1987, the Ninth Circuit Court reversed the District Court ruling in favor of the government and ruled the project EIS deficient. In August and September 1987, the District Court ordered the project construction halted at elevation 1,963, about 1/3 of dam height. On appeal, the U.S. Supreme Court reversed the decision and remanded to the Ninth Circuit in May 1989. The case was subsequently remanded to the U.S. District Court from which direction on EIS cumulative effects analysis is currently pending.

g. Completion Cost

About $100 million has been expended on project construction to date. An additional $74 million is required to complete the project. Of total cost, approximately $50 million is attributable to the court injunction.

h. Project Economic Justification

The benefit evaluation was last updated in 1983 and the project has been reported to Congress as economically infeasible. The update was only superficially done to look at Elk Creek incrementally as last added. The fundamental benefit analysis dates to the late 1950's. Based on assessment of project outputs as discussed above, the overall benefit/cost ratio is about 0.3, and the remaining benefit/remaining cost ratio is about 0.6 (at 3.25%).

OPTIONAL COURSES OF ACTION

A decision regarding the outcome of Elk Creek Project can be made with existing information and present budgetary status, or on the basis that additional information is warranted, a decision on resumption can be deferred pending outcome of ongoing NEPA procedures and Post Authorization Change documentation. Under the latter approach, only funding to complete necessary studies to reach a decision point would be necessary.

a. Completion of Authorized Project with Operation as Anticipated in Authorizing Document

Under this scenario construction would be resumed and the completed project would be operated under a "full pool" regime to provide flood control and storage for authorized purposes. Impediments to this plan include:

(1) PL 91-439 prohibits operation for irrigation purposes in the absence of irrigation contracts and an authorized USBR project.

(2) new environmental information indicates the full pool operation may be less acceptable than alternative operations.

This approach may require additional legislation to enable full reservoir operation in view of PL 91-439.

b. Completion of Dam with Modified Operation

Resumption and completion of authorized physical features of the project with alternative reservoir operation plans would be pursued. This allows the flood control purpose to be met fully and potentially offers significant reduction of adverse impacts of the full reservoir operation.

c. Modification of the Project

Reformulation to address currently projected water resources problems and needs which could be met by Elk Creek would be undertaken. The apparent result would be downsizing of the project, to the extent technically feasible, to meet remaining flood control needs in the Rogue system. Evidence suggests that a reformulated project would remain economically infeasible by a wide margin.

d. Termination

If the project was not resumed, two options are apparent: removal of existing structure, or "mothballing" to maintain opportunity for future resumption when conditions warrant. Removal would require a large financial investment, whereas a deferred project could be maintained by the government via O&M as part of the nearby Lost Creek Project. This option avoids expenditure of approximately $70 million depending on termination costs.

e. Defer Ultimate Decision Pending Completion of Additional Study

The premise under this approach is that additional information may assist any conclusion on whether to proceed with the project, and if so, whether an acceptable operation plan can be developed. The major items of information are contemporary economic analysis, reservoir operation studies, determination of wildlife mitigation needs and plans, issuance of District Court orders, and completion of NEPA procedures. A project reevaluation report/decision document would be prepared.

Encl

Elk Creek plan
Rogue system map

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April 4, 1990

The Honorable Tom Bevill
Chairman
Energy and Water Development Subcommittee
House Appropriations Committee
2362 Rayburn House Office Building
Washington, D.C. 20515

Dear Mr. Bevill:

On behalf of the Interstate Conference on Water Policy (ICWP), Jerry Vineyard, ICWP's Chairman, and I thank you for providing ICWP the opportunity to present written testimony on the FY 1991 Civil Works budget for inclusion in the hearing record of the Subcommittee on Energy and Water Development.

Since 1959, ICWP has been the national voice for state water resource management concerns, particularly those that are associated with the relationship between state and federal programs, regulatory authority, and information exchange. Our comments on the FY 1991 Civil Works budget focus on four items of standing concern: cost-sharing of Section 22 and Flood Plain Management Services, continuation of the National Water Management During Drought Study, continuation of the Corps' Recreation Partnerships Initiative, and funding for dam safety programs.

Enclosed is ICWP's written testimony for inclusion in the record. We hope that you will respond favorably to our concerns. If you have any questions, please call me at (202) 466-7287.

Sincerely,

James K. Coyne
Executive Director

Enclosure

cc: The Honorable John T. Myers, Ranking Minority Member
ICWP Board of Directors
Neil Fulton, ICWP Legislative Committee

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TESTIMONY OF
THE INTERSTATE CONFERENCE ON WATER POLICY

Regarding

FY 1991 CIVIL WORKS APPROPRIATIONS

Submitted for the Record
to the
Subcommittee on Energy and Water Development
of the
House Appropriations Committee

April 4, 1990

Testimony of the
Interstate Conference on Water Policy
FY 1991 Civil Works Budget

The Interstate Conference on Water Policy (ICWP) is the independent national association of state, interstate, and regional water administrators concerned with water quantity and quality management, conservation, and development. Since 1959, ICWP has been the voice for state water resource management concerns, particularly with regard to the relationship between state and federal programs, regulatory authority, and information exchange.

ICWP has reviewed the FY 1991 Civil Works budget request for the U.S. Army Corps of Engineers and is pleased to see that it includes a number of new initiatives and expanded efforts that address issues which ICWP believes are of high priority. In particular, ICWP supports the proposals for an expanded wetlands research effort, the continuation of the Corps' comprehensive review of the O&M program, the establishment of a Federal Infrastructure Advisory Board, and the initiation of a climate change impact research program. In addition, ICWP is pleased to see a new emphasis on environmental maintenance and restoration. This nation's civil works program must not only be sensitive to the environmental effects of water resource development projects, but must also be an agent for environmental protection and enhancement.

While there are a number of initiatives in the FY 1991 civil works program which ICWP supports, our comments will focus on a few specific items of standing concern:

SECTION 22 AND FLOOD PLAIN MANAGEMENT SERVICES

The budget proposal includes $4.5 million for planning assistance to states (Section 22 studies) and $9 million for flood plain management services. This budget request is accompanied by a proposal to cost-share these services with nonfederal sponsors on a graduated scale beginning with 10 percent in FY 1991 and increasing to 50 percent by FY 1993.

This cost-sharing proposal is similar to the one offered by the Administration last year and rejected by this Committee as contrary to the intent of current law. As the House Committee Report (H. Report 101-96) indicated last year, the costs of developing and maintaining separate cost-sharing agreements for each individual study would simply outweigh the benefits of increased revenues from local sponsors. In addition, as discussed in our testimony last year, ICWP opposes such cost-sharing for a variety of reasons related to the fundamental purposes of these services.

Throughout its history, the Section 22 planning assistance program has yielded a wide variety of products that have been invaluable in supplementing the water resources management capability of the states. To a large degree, many of these efforts are already being conducted on a partnership basis. State resources are frequently devoted to these studies or data acquisition efforts by providing in-kind services including state staff support. In this way, Section 22 studies are not only already cost-shared, but they provide flexibility to respond to special needs. Requiring cost-sharing in the form of cash matches may very well destroy the utility of the program.

Congress recognized the value of the Section 22 planning assistance program when the authorized funding level for the program was raised from $4 million to $6 million in the Water Resources Development Act of 1986. The cost-sharing reforms of that Act were not applied to the Section 22 program. ICWP believes this was done for good reason and that cost-sharing principles should not now be extended to include Corps of Engineers technical services. Cost-sharing requires significant advance cooperative planning and scheduling of state fiscal resources. Requiring cost-sharing of Section 22 studies may thus eliminate the flexibility that is fundamental to this program. In the past, Section 22 authority has been used to respond to various emergency situations and special needs. These efforts can be and often are of a collaborative nature. However, cash match funding is simply inappropriate for these programs.

Secondly, many states utilize Section 22 planning assistance for reconnaissance level type studies. As provided in Section 905(b) of the Water Resources Development Act of 1986, reconnaissance level studies do not require nonfederal cost-sharing, but are conducted at full federal expense.

ICWP urges that $5 million be appropriated for planning assistance to states and $10 million for flood plain management services. Furthermore, ICWP urges that Congress specifically direct the Corps of Engineers to offer those services without requirement of nonfederal funding matches.

DROUGHT STUDY

The budget proposal includes $2.5 million to continue the National Water Management During Drought Study. ICWP supports this study and has been working closely with the Corps on the development of the plan of study for this effort and on the Phase 1 activities begun in FY 1990.

The primary objectives of the study are to determine how water is managed during drought, to formulate and evaluate alternatives, and to make recommendations for more efficient and effective drought response. Given the nature of existing drought response strategies and mechanisms in the country, it is clear that this study will require close collaboration with state and regional agencies. In recognition of this fact, ICWP and its member states have committed themselves to providing nonfederal perspectives and guidance during the course of the study. We also hope to participate in crafting the recommendations that result from this effort.

RECREATION PARTNERSHIP INITIATIVE

In FY 1990, the Corps of Engineers began a three-year effort called "Recreation Partnerships Initiative." The FY 1991 budget proposal includes $800,000 to continue this important program. The initiative is intended to identify opportunities for non-federal public agencies and the private sector to become more involved in the development, enhancement, and operation of recreational facilities on Corps project lands.

ICWP believes this effort is, at least in part, a response to the controversy aroused over the Administration's proposal last year to close or defer maintenance of a number of Corps recreational facilities. In response to that proposal, Congress restored the necessary funds to continue federal operation and maintenance of these projects and objected to the arbitrary criteria and lack of consultation with nonfederal interests in developing the closure proposal. ICWP views the Recreation Partnership Initiative as a reasonable and constructive response to the fundamental issue of how we can jointly assure that public recreation opportunities continue to be provided. ICWP is committed to working with the Corps of Engineers on this effort and urges that funds be provided for this initiative in FY 1991.

DAM SAFETY

For the past three years ICWP has testified in support of funding for the dam safety programs authorized in Title XII of the Water Resources Development Act of 1986. To date, no funds have been requested by the Administration nor provided by Congress. The budget proposal for FY 1991 still contains no funds to initiate these significant and potentially very useful programs for guaranteeing the safety and structural integrity of dams in this country.

Title XII of P.L. 99-662 authorized three significant efforts:

a) grants to assist states for establishing and/or maintaining dam safety programs ($13 million/year)

b) training for state dam safety inspectors ($500,000/year)

c) research to develop improved techniques and equipment for dam inspection ($2 million/year)

The authorization for these programs will expire in FY 1992 despite the fact that they have yet to begin. Action is necessary this year to provide the necessary funds and direct the Secretary of the Army to proceed with these important efforts if the dam safety program is ever to be implemented as authorized by Congress in 1986.

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April 6, 1990

Hon. Tom Bevill, Chairman
Subcommittee on Energy, Water and Development
House Appropriations Committee
2362 RHOB
Washington, DC 20515

Re: FY 1991 Seepage Appropriation Request

Dear Chairman Bevill:

This letter is submitted in lieu of oral testimony on behalf of the Pueblo de Cochiti, which seeks funding for the final design phase of a project to resolve the problem of high groundwater on Pueblo lands as a result of seepage from the federally constructed Cochiti Dam. After fourteen years of conflict, the Pueblo de Cochiti and the United States Army Corps of Engineers are nearing agreement on a solution which would construct and maintain a system to drain the agricultural lands and restore them to usefulness. In addition, the agreement under negotiation would compensate the Cochitis for their past losses. These negotiations are themselves in implementation of the congressional directive in Pub. L. No. 100-202, which directed the Corps of Engineers to design such a system in consultation with the Pueblo de Cochiti and reach a settlement, if possible, with the Pueblo.

Agreement has been reached on most major issues, and discussions are continuing to resolve the last details of the settlement package. We anticipate that the cost of a complete resolution of the seepage problem will be approximately 11.2 million dollars, in 1989 dollars. When discussions are concluded with the Corps of Engineers, the parties will submit a full report and funding proposal to the Congress. At present, the Pueblo's funding request is limited to the $300,000 necessary to complete the design phase of the project.

BACKGROUND

I Cochiti Dam

Cochiti Dam is located approximately 1582 miles above the mouth of the main stream of the Rio Grande in north central New Mexico. The project is about 50 miles north of Albuquerque and about 25 miles south of Santa Fe, the state capital. The dam is located at the lower end of the rugged White Rock Canyon on Pueblo de Cochiti lands and extends across the Rio Grande and Santa Fe River. Cochiti Lake is about 20 miles long at maximum flood control pool. The Recreation pool extends about 6.5 miles upstream from the dam and has a surface area of about 1200 acres.

Congress authorized Cochiti Dam in the 1960 Flood Control Act as part of the comprehensive flood control and water development plan for the Rio Grande. Cochiti Dam is one of the ten largest earthfill dams in the United States, containing more than 65,000,000 cubic yards of earth and rock. Originally, Cochiti Dam was authorized only for flood and sediment control. However, in response to local New Mexico state and county officials, Congress modified its authorization to include a permanent 1200 surface acre lake for fish and wildlife enhancement and other recreational purposes.

Construction of Cochiti Dam began in 1965; the main embankment was completed in 1975; and the lake opened to the public in July, 1975. Cochiti Lake is an all Federal project constructed at an approximate cost of $97 million (approximately $180 million at 1989 price levels). The project controls water from an 11,695 square-mile drainage area. The dam's flood control capacity is 492,500 acre-feet, with an additional 103,800 acre-feet allocated for sediment control. The permanent recreation pool behind the dam presently consists of some 50,000 acre-feet of water.

II. Pueblo de Cochiti

The Pueblo de Cochiti is a federally recognized Indian tribe of approximately 920 members, residing in the Pueblo de Cochiti Indian Reservation, Sandoval County, New Mexico. The ancestors of the present Pueblo members have lived in the area for more than a thousand years, at one time occupying the site of the present Bandelier National Monument upstream of Cochiti Lake. The present Pueblo boundaries encompass an area of 53,000 acres of semi-arid land. Of this area, approximately 800 acres have traditionally been devoted to agriculture. Cochiti Dam and its associated lake occupy 11,000 acres of the Pueblo's ancestral land. In return for a perpetual easement of 4,064 acres granted to the United States Army Corps of Engineers, the Pueblo de Cochiti was paid $145,200. Remaining lands were obtained from the Forest Service and other government agencies. The residential area of the Pueblo lies below the dam, as do the Tribe's remaining farmlands. (Much of the Pueblo's traditional agricultural lands now lie beneath the recreational pool.) The Pueblo did not choose to have the dam located on its lands.

The cultural life of the Pueblo de Cochiti is closely interwoven with its land. Historically, the Cochitis' economy was based on agriculture. Recently, cultivation of grains and alfalfa and raising of cattle were added to the traditional crops of maize, beans and squash. Religious ceremonials are often performed at natural shrines, or according to schedules governed by agricultural activities. In July of each year, the Cochitis perform a corn dance at which non-members are welcome. Members of the Pueblo de Cochiti hold the land itself to be sacred. For them, the loss of land, or its desecration, is not merely an economic deprivation, but a loss of a fundamental and spiritual aspect of their lives.

Construction of Cochiti Dam brought severe hardship to the Pueblo de Cochiti. The Cochitis were not eager to have the dam built, nor to give over their lands for the project. The whirlpool rock, sacred to the Pueblo de Cochiti (as well as to other pueblos), is within the dam area. Pueblo de Cochiti officials believed they were assured by the Corps of Engineers that the rock would not be harmed by the dam's construction. However, the rock was cut in half, forever impairing traditional religious practice. Pending proposals to add a hydropower facility to the dam threaten the rock and the Cochitis' religion even further. Finally, in the fourteen years since the Cochiti Dam's gates were closed, water seepage under the dam has flooded Cochiti lands, rendering farming impossible and endangering the Cochitis' traditional way of life.

Until completion of Cochiti Dam, the people of the Pueblo de Cochiti were able to continue, essentially undisturbed, their traditional agricultural and religious practices. They were able to worship at natural shrines and to cultivate the crops required for physical and spiritual sustenance. The dam has literally inundated many of those shrines and threatens to make farming a memory from the old days. Without its agricultural base, the economic structure of the Pueblo de Cochiti has been forced to place greater emphasis upon wage labor. This, in turn, poses an increased challenge to traditional social structure, as more and more workers are forced to leave the Pueblo de Cochiti, and as customary networks fall into disuse or decay. If agricultural pursuits are permanently lost, then a way of life will have been sacrificed. Thus it is apparent that the Pueblo de Cochiti loses much more than its crops when it loses its farmland.

III. The Seepage Problem

The problem is a direct result of ground water flow under Cochiti Dam. The flooding of about 500 acres of agricultural fields downstream of the dam was unanticipated. Several attempts have been made to solve the problem throughout its fourteen-year history, but the problem remains unresolved.

On November 29, 1985, the Pueblo de Cochiti filed suit in Federal District Court against the United States Army Corps of Engineers and other federal defendants, seeking damages and other injunctive relief as a result of destruction of agricultural lands by water seeping under the Cochiti Dam. The lawsuit was the result of frustration on the part of the Cochitis in their attempt to obtain redress of that harm and to put in place a program preventing further harm. In 1988, Congress approved Public Law 100-202, providing a means for the Pueblo de Cochiti and the Corps of Engineers to resolve the issue outside of adversary proceedings.

Pursuant to the congressional directive of Public Law 100-202, the Pueblo de Cochiti has been meeting with the Corps of Engineers to negotiate a resolution of the seepage problem that is satisfactory to all concerned. In this process, an executive committee, co-chaired by the Governor of the Pueblo de Cochiti and the District Commander for the Albuquerque District Corps of Engineers, has developed a nearly completed proposal for remedying the situation by design and construction of a system that would drain the lands and restore them to traditional agricultural use. In addition, the proposal would provide a means to fund operation and maintenance, and compensate the Pueblo for past economic damages.

A horizontal buried drainage system is the only acceptable solution for restoring the Cochitis' agricultural lands. The U.S. Bureau of Reclamation was selected as the design agent for the drain system. The estimate of design and construction costs is $5,308,400 (based upon October 1989 prices). Another $3,804,900 will be needed to create a sinking fund for operation, maintenance and replacement. Since the Corps of Engineers operations and maintenance budget process does not recognize maintenance of an agricultural drainfield off Corps lands as a legitimate project purpose, and the Cochitis believe that they should not be responsible for operation of maintenance of a system that had to be installed through no fault of their own, the Bureau of Indian Affairs has agreed to accept the responsibility for administering the $3,804,900 sinking fund for the government to operate and maintain the drainage system.

The Pueblo de Cochiti and the Corps of Engineers anticipate a settlement of $2,046,400 (in 1989 dollars) to reimburse the

Cochitis for past crop losses, for infrastructure repair, and for other past economic losses.

The total project, in 1989 dollars, will cost approximately $11,159,700 in 1989 dollars. Full funding for the project for a later year would be slightly higher.

PRESENT NEEDS

While the Pueblo de Cochiti is confident that it will soon reach agreement with the Corps of Engineers on a joint progress report to the Congress, it is essential that progress on the design of the drainage system be able to go forward while negotiations continue. For this reason, we ask that the Seepage project be funded in the amount of $300,000 for fiscal year 1991. (If the Corps and the Pueblo are able to submit a joint report sufficiently in advance of FY 1991, additional funding may be requested for other project costs, to minimize their inflationary effect on the total cost.)

Sincerely,

HOBBS, STRAUS, DEAN & WILDER

Jerry C. Straus

By: Jerry C. Straus

cc: Cong. Bill Richardson

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March 27, 1990

Statement from:

UPPER MISSISSIPPI FLOOD CONTROL ASSOCIATION

By:

William H. Klingner, President
Quincy, Illinois 62301

To: The United States Senate Committee on Appropriations, Subcommittee on Energy and Water Development,
March 27, 1990.

The United States House of Representatives, Committee on Appropriations, Subcommittee on Energy and Water Development
March 27, 1990.

SUMMARY AUTHORIZED PROJECTS

PROJECTS	EST.FED. COSTS	BUDGETED FY 91	REQUESTS	REMARKS
1. South Quincy Drainage & Levee District, IL (F.C.)*	$7,155,000	0	Fully Funded	See Discussion
2. Green Bay Levee & Drainage Dist. No. 2, Iowa (PED)**	$ 700,000	0	$200,000	See Discussion
3. Muscatine Island Levee & Drainage Dist., Muscatine Louisa Co. Drainage District No. 13, Iowa (C)*	$ 5,720,000	$ 0 (C)	$650,000 (C)	See Discussion

*Flood Control
**(PED) Planning and Engineering Design
(C) Construction

Please bear with us as this testimony is largely repetitious of our testimony as presented, April 1989, basically due to the status quo of the projects.

Three of our twenty-four Member Districts were recommended for increased flood protection under P.L. 99-662. They are the South Quincy Drainage and Levee District, Illinois; Green Bay Levee and Drainage District No. 2, Iowa; and Muscatine Island Levee & Drainage District and Muscatine Louisa County Drainage District No. 13, Iowa.

A brief discussion of the three Upper Mississippi Flood Control Association's authorized projects is as follows:

1. SOUTH QUINCY DRAINAGE AND LEVEE DISTRICT FLOOD CONTROL PROJECT

It is a pleasure to report that due to the cooperative efforts of all concerned; the U.S. Congress; the Corps of Engineers; the State of Illinois; The City of Quincy, Illinois; and the local sponsor and industries; this local Flood Control Project is nearing completion. A fine work it is.

The project is fully funded and should be completed by this fall, 1990.

The final current estimated construction costs are:

Federal Costs at 75% ----- $7,155,000
Non-Federal at 25% ------- $2,385,000

2. THE GREEN BAY LEVEE AND DRAINAGE DISTRICT NO. 2, IOWA, FLOOD CONTROL PROJECT

The Green Bay Levee and Drainage District No. 2, Iowa, Flood Control Project remains dormant due to lack of Federal funding.

May we be forgiven for once again repeating. This Project after running the gamut of approximately nine years of study, dredging demonstration projects, inter-State and Federal Agreements, a C.O.E. design study or Survey Report based upon a 200 year flood frequency protection, was recommended for construction. The Board of Engineers of Rivers and Harbors during review recommended that the protection be increased to a 500 year flood frequency design.

The administration found that a 500 year design was not appropriate for Agriculture areas and questioned the proposed protection to the large Fertilizer Plant within the District.

It is our understanding that in the Corps of Engineers Cost-Benefit analysis, benefits were not taken for probable damages of chemical spills into the River due to a levee failure.

The Drainage District, has no serious objection to reverting back to the original design and cost basis of a 200 year frequency flood protection project, but agrees with the analysis of the Board of Engineers for Rivers and Harbors that a 500 year design is cost effective.

It is the feeling of local landowners that the large Chemical Plant which is now closed down due to the depressed agricultural segment of the economy, could be disregarded in evaluating the cost/benefit ratio. It could well be that the District without the Chemical Plant could stand on its own merit.

Our Association is concerned over the status of this flood control project, due to its dormant stage and lack of funding during the last four years. We understand that projects which do not receive funding through appropriation bills within five years are to be automatically deauthorized. If our information is correct, this could be November 1, 1991.

Continuing Planning and Engineering funds for FY 91 might develop justification for a closer look at the feasibility of the project. At least another look might prevent the total loss of the great amount of Federal, State and Local costs incurred and spent to date.

The C.O.E. has expressed a capability of $200,000 for Continuing Planning and Engineering for FY 91. The Landowners are anxious to keep the project alive and hope that some funds can be found to initiate Planning and Engineering Design (PED).

The Drainage District realizes that if Congress provides funds not included in the President's FY 91 Budget, some other recommended project must be reduced. If the project cannot be funded this year, then FY 92 is the District's last opportunity unless the time period for deauthorization can be extended or exempted. Please give consideration.

The District has agreed to fund its 25% cost sharing provision of the "Water Resources Development Act of 1986, P.L. 99-662".

3. THE MUSCATINE ISLAND LEVEE DISTRICT, MUSCATINE-LOUISA COUNTY DRAINAGE DISTRICT NO. 13, IOWA, AND THE MUSCATINE CITY-MUSCATINE ISLAND DISTRICT

This project report is under review in the Chief's Office, U.S. Army Corps of Engineers and other Federal offices. Final design should be completed in April of this year, 1990. The LCA (Local Cooperative Agreement) should be completed in April, 1990. We further understand that the delay is largely due to a modification of design from a 500 year flood frequency design to a 200 year design.

No construction funds are needed until the review is completed. This project has been basically stalled for three years. Should the ongoing Review be completed by late spring or early summer, it might be possible to initiate construction in FY 91 providing Congress would authorize and appropriate the necessary funds. We realize that the Corps of Engineers has expressed "no capability" for FY 91. However, if the review is completed early this spring, we respectfully request an appropriation of $650,000 to initiate construction. We urge your Honorable Committee to check with the Corps of Engineers.

The following projects are under study.

SPECIAL STUDIES

1. MARION COUNTY DRAINAGE DISTRICT, MISSOURI

The Marion County Drainage District, Marion County, Missouri, a member of our Association, has a small watershed project under study, authorized under Section 205 of the Flood Control Act of 1948, as amended. The Act provides authority to the Chief of Engineers to approve and construct such projects if they are economically justified and the cost does not exceed a specified amount. The Drainage District has been unofficially notified that the study will be negative. On that basis, the Marion County Drainage District is proceeding with a Soil Conservation Service (SCS) project whereby small siltation and retention reservoirs are to be constructed in the hill-land watershed. This alternate solution is well underway.

2. SNY ISLAND LEVEE DRAINAGE DISTRICT, ILLINOIS

The Sny Island Levee Drainage District has under study the review of completed projects (R.C.P.), namely the Diversion of Horton and Dutch Creeks directly into the Mississippi River in lieu of the Dutch-Horton Creek Reservoir or in conjunction therewith and other completed works.

The Corps of Engineers is proceeding under Section 205 of the 1948 Flood Control Act as amended in its study.

Local interests are very anxious for the completion of this study and a successful resolution of the problem. The Drainage District has agreed to participate in cost sharing as per current recommendations P.L. 99-662.

In addition to the specified Dutch-Horton Reservoir Diversion Channel Study, the Corps has been asked to make a Reconnaissance Survey of the Upper Main Stem Levee to ascertain if it is feasible to upgrade this portion of the Levee to afford additional protection to the Village of Hull, Illinois and the new multi-million dollar Central Illinois Expressway now under construction which traverses part of the District at flood plain elevation.

3. COMMENTS

During the past several years, members of our Association continue to express concern over river bank erosion. When the Upper Mississippi River Navigation System was constructed in the 1930's, it was our Association's view, and still is, that the then existing private levees became a part of the Navigation System, all tied closely to the economic welfare, human lives, recreation, and environment of the entire region. As the years have passed, the Mississippi River in its natural meandering action has tended to erode certain bank areas until some long existing levees are becoming endangered. Our Association believes 'a stitch in time saves nine'.

It is hoped that a means can be developed whereby the Corps of Engineers will have the authority and necessary funding to repair such eroded areas before a levee break occurs or subsequent remedial action becomes very costly.

The Corps of Engineers has been apprised of our Association's concerns and are cooperative in seeking a solution.

Our Association recognizes that bank erosion problems, if fully addressed, could become a major costly nationwide endeavor. However, there would appear justification for paying special attention to the Upper Mississippi River Navigation System.

One major justification being that many of the Upper Mississippi River Lock and Dams are anchored in levees on both sides of the river, which levees were originally constructed entirely with local funds by the Drainage Districts and other public and private parties.

There seems to be a Federal perception that since the Federal Government strengthened the existing levees from Hamburg Bay to Guttenburg, Iowa under the 1954 Flood Control Act and similar acts, and the Drainage Districts signed assurances that the Districts would operate and maintain the levees in accordance with the dictates of the Secretary of the Army of the U. S. Government, the responsibility of shoreline protection, as it relates to the levees, rests on the shoulders of the Drainage Districts.

The Districts feel that assuming the responsibility of keeping the River in its channel is beyond the scope of the intent of the Federal Levee Improvement Assurance Agreements.

In that belief, the Districts are attempting to have legislation enacted giving the Corps of Engineers the Authority and funding to take remedial action. Our Association had hoped to have such legislation before Congress by this date.

If such legislation becomes a reality, we respectfully request your Honorable Committee and or members thereof to give enactment serious consideration.

It is a privilege to present this testimony.

Respectfully submitted,

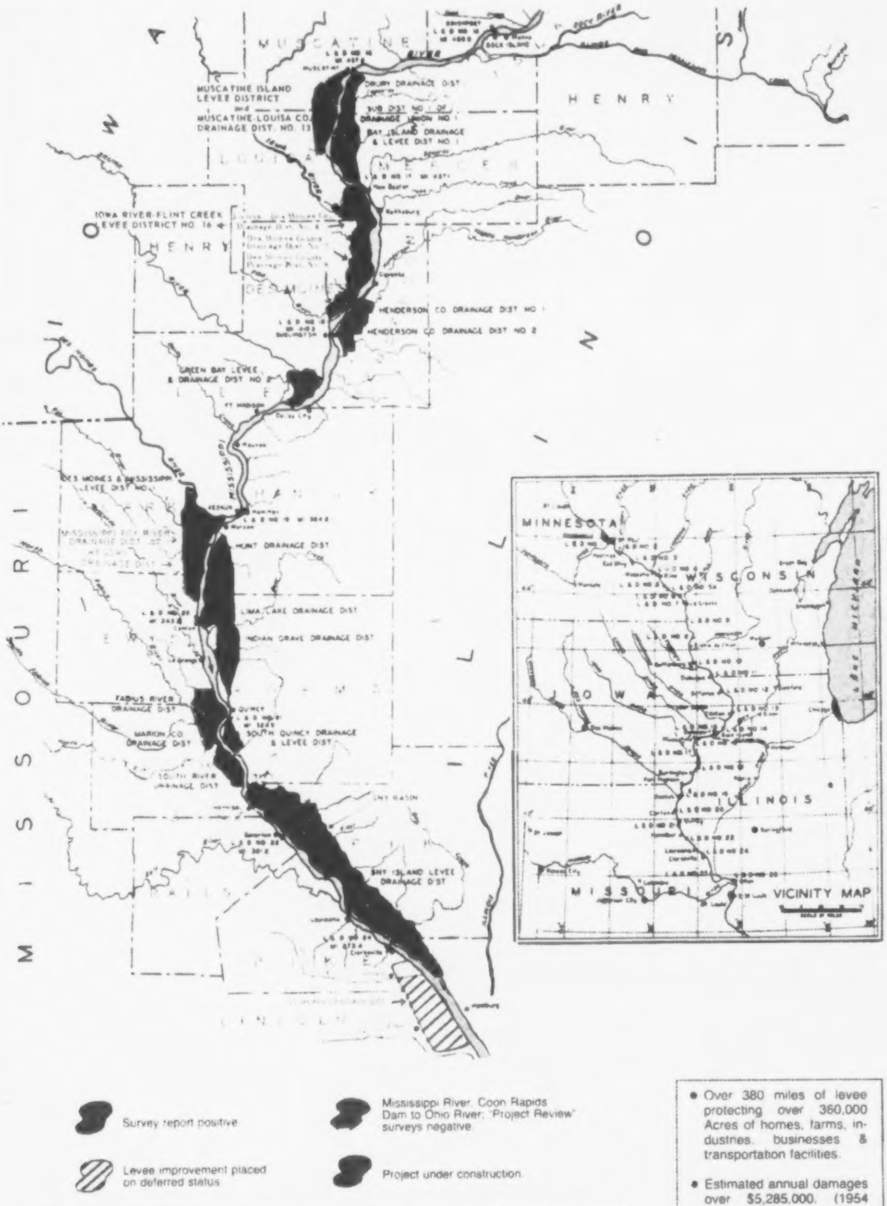
UPPER MISSISSIPPI FLOOD
CONTROL ASSOCIATION

W.H. Klingner

W. H. Klingner, P.E., President

UPPER MISSISSIPPI FLOOD CONTROL ASSOCIATION

REPRESENTING LEVEE AND DRAINAGE DISTRICTS BORDERING
ON UPPER MISSISSIPPI RIVER IN ILLINOIS, IOWA, AND MISSOURI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DES MOINES
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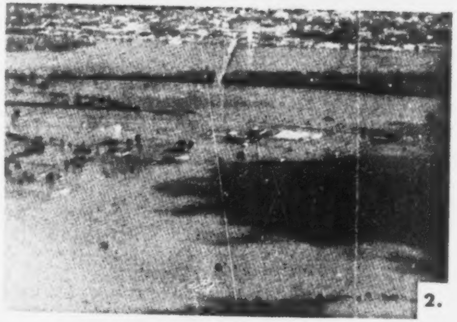
HANCOCK
CLARK
ADAMS
PIKE
RALLS
MARION
LINCOLN
ROCK RIVER
IOWA RIVER
MISSISSIPPI
MUSCATINE ISLAND LEVEE DISTRICT and MUSCATINE-LOUISA CO. DRAINAGE DIST. NO. 13
DRURY DRAINAGE DIST
SUB DIST NO. 1 OF DRAINAGE UNION NO. 1
BAY ISLAND DRAINAGE & LEVEE DIST NO. 1
IOWA RIVER-FLINT CREEK LEVEE DISTRICT NO. 16
HENDERSON CO DRAINAGE DIST NO 1
HENDERSON CO DRAINAGE DIST NO 2
GREEN BAY LEVEE & DRAINAGE DIST NO 2
DES MOINES & MISSISSIPPI LEVEE DIST NO. 1
HUNT DRAINAGE DIST
LIMA LAKE DRAINAGE DIST
INDIAN GRAVE DRAINAGE DIST
FABIUS RIVER DRAINAGE DIST
MARION CO DRAINAGE DIST
SOUTH QUINCY DRAINAGE & LEVEE DIST
SOUTH RIVER DRAINAGE DIST
SNY ISLAND LEVEE DRAINAGE DIST
SNY BASIN
QUINCY
KEOKUK
BURLINGTON
MINNESOTA
WISCONSIN
IOWA
ILLINOIS
MISSOURI
LAKE MICHIGAN
VICINITY MAP
● Survey report positive
● Mississippi River, Coon Rapids Dam to Ohio River; "Project Review" surveys negative
▨ Levee improvement placed on deferred status
● Project under construction

Projects shown were authorized in Flood Control Act 1954, House Document 281 83 2, House Document 247 83 2; or Flood Control Act 1946 House Document 713 79 2. Gregory Drainage District authorized by 1962 Flood Control Act, approved October 23, 1962, House Document 564 87 2. Elsberry Drainage District Authorized 1944, House Document 669, 76th Congress, 3rd Session withdrew from Association 1982.

- Over 380 miles of levee protecting over 360,000 Acres of homes, farms, industries, businesses & transportation facilities.
- Estimated annual damages over $5,285,000. (1954 Base)
- Along a 350 mile reach of the Mississippi River—home and work place for over 550,000 people.

Royal Printing Co.

1.



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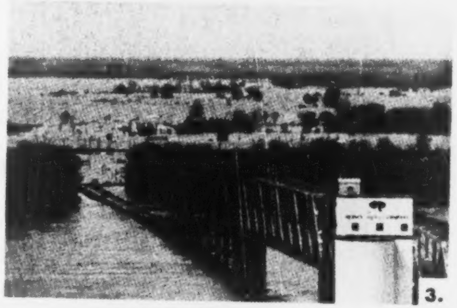

3.

UPPER MISSISSIPPI FLOOD CONTROL ASSOCIATION

REPRESENTING LEVEE AND DRAINAGE DISTRICTS BORDERING ON UPPER MISSISSIPPI RIVER IN ILLINOIS, IOWA AND MISSOURI

William H. Klingner, President, 613 Broadway, Quincy, IL 62301

John Kinscherff, Vice President, Illinois
Nebo, Illinois 62355

Wm. J. Pieper, Vice President, Iowa
R.F.D., Wever, Iowa 52658

D. C. McConnell, Vice President, Missouri
Taylor, Missouri 63471

Michael D. Klingner
613 Broadway, Quincy, Illinois 62301

Matthew A. Hutmacher, Treasurer
428 N. 6th St., Quincy, Illinois 62301

Early in the Nineteen Fifties, individual Member Districts of our present Association began appearing before your Honorable Committee to urge the completion of the Upper Mississippi River Development proposed in the 1930's.

Each year since our first appearance on May 15, 1954, you have granted us the honor and privilege of appearing before your Committee to present our views.

In 1954, sixteen of our present twenty-five member Districts which were included in the Flood Control Act of 1954, House Document No. 281, 83rd Congress, banded themselves together as the Upper Mississippi Flood Control Association.

Since that time our Association has been the official spokesman for all our member Districts in Missouri, Illinois and Iowa on both sides of the River extending from Guttenberg, Iowa to Hamburg Bay, Illinois.

The 1962 Flood Control Act authorized the Gregory Drainage District project, House Document No. 546, 87th Congress, Second Session. This Missouri District was admitted as a member of our Association on February, 1967 and lies directly across the Mississippi River from the Hunt-Lima Lake Drainage Districts of Illinois.

Directly across the River from Hamburg Bay, Illinois and opposite the lower end of the Sny Island levee Drainage District, lies the Elsberry Drainage District, Lincoln and Pike Counties, Missouri. This District contains approximately 20,000 acres of rich agricultural lands protected by 24.4 miles of levees. These levees also protect the City of Elsberry and the surrounding area.

The Elsberry Drainage District Flood Protection Project was authorized in 1944 under House Document No. 669, 76th Congress, 3rd Session. Early in 1970 the Elsberry Drainage District became a member of our Association. The project has been placed on inactive status. The District withdrew from the Association in 1982.

The Mississippi Fox Drainage District #2 was admitted to membership in 1976. The Project Survey was authorized prior to 1965 under the authorized "Fox River, Iowa and Missouri Study."

The Sny Island Levee Drainage District Seepage Study was authorized under the Rivers and Harbors Act of 1937 and reauthorized under R. & H. Act of March 2, 1945. The Public Appropriations Act of 1973 (P.L. 92-405) provided funds for restudy.

The adjoining pictures were taken in the Fabius River Drainage District during the peak of the 1973 flood.

1. Industrial Area West Quincy, showing flooded Mississippi River.
2. Fabius River Drainage District flooded—City of Quincy, Illinois in background.
3. Quincy Memorial Bridge looking West into Missouri. U. S. Highway 24 closed on account of flood.
4. Motel completely under water from Mississippi River.

FREE
CLOVERLEAF
MOTEL

4.

MEMBER DISTRICTS

1. Drury Drainage District—Illinois
2. Muscatine-Louisa County Drainage District No. 13—Iowa
3. Muscatine Island Levee District—Iowa
4. Muscatine City-Muscatine Island Flood Control Commission—Iowa
5. Sub-District No. 1 of Drainage Union No. 1—Illinois
6. Bay Island Drainage & Levee District No. 1—Illinois
7. Louisa-Des Moines County Drainage District No. 4—Iowa
8. Des Moines County Drainage District No. 7—Iowa
9. Des Moines County Drainage District No. 8—Iowa
10. Iowa River-Flint Creek Levee District No. 16—Iowa
11. Henderson County Drainage District No. 1—Illinois
12. Henderson County Drainage District No. 2—Illinois
13. Green Bay Levee & Drainage District No. 2—Iowa
14. Des Moines & Mississippi Levee District No. 1—Missouri
15. Hunt Drainage District—Illinois
16. Lima Lake Drainage District—Illinois
17. Indian Grave Drainage District—Illinois
18. Fabius River Drainage District—Missouri
19. Marion County Drainage District—Missouri
20. South Quincy Drainage & Levee District—Illinois
21. South River Drainage District—Missouri
22. Sny Island Levee Drainage District—Illinois
23. Gregory Drainage District—Missouri
24. Elsberry Drainage District—Missouri (withdrew 1982)
25. Mississippi-Fox Drainage District No. 2—Missouri

WESTIN
HOTELS & RESORTS

ARIZONA BILTMORE

Hud Hinton
General Manager

March 29, 1990

The Honorable Tom Bevill
Chairman
Subcommittee on Energy and Water Development
2362 Rayburn House Office Building
Washington, D.C. 20515

RE: ARIZONA CANAL DIVERSION CHANNEL (ACDC)

Dear Congressman Bevill:

Enclosed please find a letter which I respectfully request be submitted as testimony in hearings before the Subcommittee on Energy and Water Development, House Appropriations Committee.

Sincerely,

cc: The Honorable Jon Kyl, U.S. House of Representatives
The Honorable Linda Nadolski, Phoenix City Council

24th Street and Missouri, Phoenix, Arizona 85016, (602) 955-6600

REMARKS BEFORE THE SUBCOMMITTEE ON
ENERGY AND WATER DEVELOPMENT
HOUSE APPROPRIATIONS COMMITTEE

HUD HINTON

MARCH 29, 1990

TESTIMONY

WESTIN
HOTELS & RESORTS

ARIZONA BILTMORE

Hud Hinton
General Manager

March 29, 1990

The Honorable Tom Bevill
Chairman
Subcommittee on Energy and Water Development
2362 Rayburn House Office Building
Washington, D.C. 20515

Dear Congressman Bevill:

After much study and consideration, I strongly urge you to oppose the Arizona Canal Diversion Channel (ACDC).

Such a measure would severly impact the business of the Arizona Biltmore and its viability as a world class resort.

It is likely that the closure of the resort would be necessary and thus would jeopardize the Mobil Five-Star rating which the Arizona Biltmore has held longer than any other hotel in America - 31 consecutive years.

Additionally, the continuity of the resort's work force would be interrupted and result in the unemployment of several hundred Phoenix residents.

The Arizona Biltmore, due to such disruption, would suffer loss of revenue, i.e., cancellation of conventions and conferences as well as leisure travel bookings.

I am certain you are aware the ACDC is overwhelmingly opposed by Phoenix and Paradise Valley residents. The fiscal responsibility of our representatives is in question in light of current federal insolvency and the addition of an expenditure which is not justified.

The impact this measure will have on local citizens and businesses is significant and I appeal to you for a responsible course of action.

Sincerely,

cc: The Honorable Jon Kyl, U.S. House of Representatives,
The Honorable Linda Nadolski, Phoenix City Council

24th Street and Missouri, Phoenix, Arizona 85016, (602) 955-6600

BRIAN L. ZEMP
6525 E. Ironwood Dr.
Paradise Valley, Arizona 85253

VIA FACSIMILE
FIRST CLASS MAIL

March 27, 1990

The Honorable Tom Bevill
Chairman, Sub-Committee on
Energy and Water Development
U.S. House of Representatives
2302 Rayburn House Office Building
Washington, D.D. 20515-6020

Dear Representative Bevill:

As President of the Paradise Valley Homeowners Association, I am hereby requesting an opportunity to appear before the House Sub-Committee on Energy and Water Development on March 29, 1990, with respect to Reach 4 of the Arizona Canal Diversion Channel, proposed as a part of the Army Corps of Engineers' New River and Phoenix City Streams Flood Control Project.

The Paradise Valley Homeowners Association, which represents homeowners in the Town of Paradise Valley, Arizona, is opposed to Reach 4 of the Arizona Canal Diversion Channel as being; 1) unnecessary, 2) improperly authorized, and 3) environmentally and aesthetically outrageous.

Respectfully,

Brian L. Zemp

cc: Representative John Kyl
(via facsimile)

003/rr/203

TOWN OF
PARADISE VALLEY
6401 EAST LINCOLN DRIVE
TOWN OF PARADISE VALLEY, ARIZONA 85253
PHONE: (602) 948-7411
FAX: (602) 951-3715
OFFICE OF: COUNCILMAN SCOTT H. O'CONNOR

April 2, 1990

The Honorable Thomas Bevill
Chairman
Subcommittee on Energy and Water Development
United States House of Representatives
2360 Rayburn House Office Building
Washington, D.C. 20515-6020

Re: Reach 4, Arizona Canal Diversion Channel
Phoenix, Arizona and Vicinity Flood Control Project

Dear Chairman Bevill:

Enclosed please find brief remarks which I respectfully request be submitted as testimony in hearings before the Subcommittee on Energy and Water Development, House Appropriations Committee, concerning the Army Corps of Engineers request for continued funding of the referenced project.

Very truly yours,

Scott H. O'Connor /cl.

Scott H. O'Connor
Councilman
Town of Paradise Valley

SHO/cl

cc: The Honorable Robert Byrd
Chairman, Senate Committee on Appropriations
311 Hart Senate Office Building
Washington, D.C. 20510

The Honorable Jon Kyl
U.S. House of Representatives
313 Cannon House Office Building
Washington, D.C. 20510

The Honorable Dennis DeConcini
U.S. House of Representatives
328 Hart, Senate Office Building
Washington D.C. 20510

02JLB957/JLB

REMARKS BEFORE THE SUBCOMMITTEE
on
ENERGY & WATER DEVELOPMENT
# of the
HOUSE APPROPRIATIONS COMMITTEE

Scott H. O'Connor, Councilman
Town of Paradise Valley, Arizona
April 2, 1990

Reach 4 of the Arizona Canal Diversion Channel (ACDC), a part of the Phoenix, Arizona and Vicinity flood control project, was authorized in 1974 by the Corps of Engineers as a "limited modification" to the larger project authorized by Congress in 1965. At the time, Reach 4 was to have cost $34 million, exceeding the Corps' authority for such limited modifications. Reach 4 is now projected to cost nearly $90 million. The 1972 flood, which precipitated Reach 4, only did about $4 million in damage despite being the largest flood for which any records were kept.

Part of Reach 4 is proposed to be built within the Town of Paradise Valley, Arizona, although none of the flood control benefits accrue to citizens or property in the Town. Rather, the Town must suffer the ugly concrete scar designed by the Corps. Our Town Council unanimously opposed Reach 4 in 1974. For the ensuing 10 years, the Corps and their local sponsor, the Maricopa County Flood Control District continued with their planning and offered no assistance to our Town in modifying the design to mitigate our concerns unless we were willing to pay for the changes. Yielding to the power of the Corps, our Town narrowly agreed in 1985 to support completion of Reach 4 with the expressed request that design alternatives be considered to improve the project's appearance. The Corps considered more costly and less attractive alternatives that did not include covering the proposed open channel.

It had become obvious that neither the Corps nor the County had any intent to cooperate with our jurisdiction if it meant changing anything in their plan or would cost any more.

Finally, in late 1989, with a construction start less than one year away, our Town hired its own civil engineering consultant to study alternatives. We find that with savings from redesign of the Corps' channel within Paradise Valley plus approximately $207,000 additional funding (which our Town and citizens could bear), the entire length of Reach 4 in Paradise Valley could be covered and buried. This would be possible with no increase in the budgeted costs of the Corps or the County.

Nevertheless, in oral testimony last week neither Congressman Kyl from our district, nor representatives from the County made any mention of our alternative proposal or our continuing opposition to the present design. I may be naive, but I am shocked that even when a local government can demonstrate with reasonable documentation a more attractive solution to a federal project it doesn't want in the first place, its pleas are met with cool, passive resistance designed to stifle the new ideas.

I am angry about the wasteful spending on Reach 4 and am doubly incensed that when we offer to spend our own money on mitigation of a bad design we are just as easily dismissed.

If any member of the Subcommittee would like more information on Paradise Valley's problems with Reach 4, I will be happy to provide it.

02JLB957/JLB

March 30, 1990

The Honorable Tom Bevill
Chairman
Subcommittee on Energy and Water Development
2362 Rayburn House Office Building
Washington, DC 20515

RE: Reach 4 of the Arizona Canal Diversion Channel (ACDC), Phoenix, AZ

Dear Congressman Bevill:

Enclosed please find a letter which I respectfully request be submitted as testimony in hears before the Subcommittee on Energy and Water Development, House Appropriations Committee.

Sincerely,

Elizabeth B. Lewis

Elizabeth B. Lewis, Ph.D.
4325 East Palo Verde Drive
Phoenix, AZ 85018

cc. The Honorable Jon Kyl, U.S. House of Representatives
The Honorable Linda Nadolski, Phoenix City Council

REMARKS BEFORE THE SUBCOMMITTEE ON
ENERGY AND WATER DEVELOPMENT
HOUSE APPROPRIATIONS COMMITTEE

HUD HINTON
MARCH 29, 1990
TESTIMONY

March 30, 1990

The Honorable Tom Bevill
Chairman, Subcommittee on Energy and Water Development
2362 Rayburn House Office Building
Washington, DC 20515

Re: CoE appropriation for Reach 4 of the Arizona Canal Diversion Channel (ACDC), Phoenix, Arizona

Dear Congressman Bevill,

I am writing you on behalf of **SANE** (Save Arizona's Natural Environment) to urge your opposition to the appropriation of funds for the extension of the Arizona Canal Diversion Channel (ACDC) through Reach 4. Any additional funding of this questionable flood control system should be delayed until important economic and environmental issues are responsibly addressed.

We support flood control when this can be achieved in a fiscally responsible and environmentally sensitive manner. Reach 4 as now planned meets neither criterion.

According to the 1987 Economic Analysis prepared by the CoE, **"Reach 4 does not meet the benefit-to-cost criterion for Federal investment under the interest rate currently specified for new projects."** Using the 1987 discount rate the CoE found the benefit-to-cost ratio for Reach 4 to be 0.4, an unacceptable ratio by federal standards.

Reach 4's EIS, prepared by the CoE in 1976, and the two cursory supplemental Environmental Assessments, prepared in 1985 and 1986, fail to satisfy the requirements of the NEPA and to address compliance with the Arizona Environmental Quality Act. Furthermore, neither the EIS or the later assessments provide sufficient consideration of alternatives to the ACDC.

With so many worthy projects vying for Congressional funding it seems a shame to fund an $85 million dollar project which (a) has obvious inherent problems and (b) has aroused such a great deal of opposition in both Phoenix and Paradise Valley.

Sincerely,

Elizabeth B. Lewis

Elizabeth B. Lewis, Ph.D.
4325 East Palo Verde Drive
Phoenix, AZ 85018
602-840-6497

cc. The Honorable Jon Kyl, U.S. House of Representatives
The Honorable Linda Nadolski, Phoenix City Council

5702 N. 30th Street
Phoenix, Arizona 85018

The Honorable Tom Bevill
Chairman
Subcommittee on Energy and Water Development
2362 Rayburn House Office Building
Washington, C.C. 20515

RE; ARIZONA CANAL DIVERSION CHANNEL (ACDC)

Dear Congressman Bevill:

Enclosed please find a letter which I respectfully request be submitted as testimony in hearings before the Subcommittee on Energy and Water Development, House Appropriations Committee.

Sincerely,

Bob Cummings (PP.RS.)

Robert Cummings M. D.

cc: The Honorable Jon Kyl, U.S. House of Representatives
The Honorable Linda Nadolski, Phoenix City Council

REMARKS BEFORE THE SUBCOMMITTEE ON
ENERGY AND WATER DEVELOPMENT
HOUSE APPROPRIATIONS COMMITTEE

ROBERT CUMMINGS, M. D.
APRIL 1, 1990
TESTIMONY

April 1, 1990
5702 N. 30th Street
Phoenix, Az. 85018

The Honorable Tom Bevill
Chairman
Subcommittee on Energy and Water Development
2362 Rayburn House Office Building
Washington, D.C. 20515

Dear Congressman Bevill:

At this late date I continue to oppose the construction of Reach 4 of the Arizona Canal Diversion Channel (ACDC). This very moment is the last opportunity to reconsider the feasibility of this flood control project in its present form.

Several considerations prompt me to request of your favorable committee that they stop construction of Reach 4.

There is no urgency for this project now other than to complete it with the funds appropriated.

It is time now to consider more modern engineering using refined techniques that could allow ultimate completion with less expense, less destruction of prime residential areas and less damaging disruption of the operation of commercial enterprises.

Lets await the return of a more stable economy and take the time to review more cost effective projects in the community!

Sincerely,

Bob Cummings ([illegible])

Robert Cummings M. D.

cc: The Honorable Jon Kyl, U.S. House of Representatives
Linda Nadolski, Phoenix City Council

5600 N. Palo Cristi Road
Paradise Valley. Az. 85253

The Honorable Tom Bevill
Chairman
Subcommittee on Energy and Water Development
2362 Rayburn House Office Building
Washington, C.C. 20515

RE: ARIZONA CANAL DIVERSION CHANNEL (ACDC)

Dear Congressman Bevill:

Enclosed please find a letter which I respectfully request be submitted as testimony in hearings before the Subcommittee on Energy and Water Development, House Appropriations Committee.

Sincerely,

Nancy O Swanson

Nancy O. Swanson (Mrs. R.)

cc: The Honorable Jon Kyl, U.S. House of Representatives

REMARKS BEFORE THE SUBCOMMITTEE ON
ENERGY AND WATER DEVELOPMENT
HOUSE APPROPRIATIONS COMMITTEE

NANCY SWASNON
MARCH 31, 1990
TESTIMONY

The Honourable Tom Bevill
Chairman, Sub-Committee on Energy & Water Development
U.S. House of Representatives
2302 Rayburn House Office Building
Washington D.C. 205-6020
Phone: 202-225-4876

Dear Congressman Bevill:

Please consider carefully the funding for Reach 4 of the Arizona Canal Diversion Channel. The facts and figures presented by the County Board of Supervisors, the Army Corps, and Congressman Kyl conflict with those of Citizens in Opposition to Reach 4. Hear both sides! A few facts to consider:

1) While there was real flood control need in Reaches 1, 2 and 3, the environmental destruction inherent in the Reach 4 extension outweighs the dubious flood control need.

   The cement ditch will border the most scenic and recreationally-used canal in Phoenix, destroying the natural ambiance of the canal and permanently scarring one of Phoenix' historic and tourist treasures, the Biltmore Hotel area.

   Expanses of cement hold desert heat, raise nighttime temperatures, demand more air-conditioning energy. Residential areas surround Reach 4.

2) Reach 4 was in response to a 1972 flood which caused 3.8 million damage. Reach 4 will cost in excess of 80 million, was designed for a once-in-a-hundred year flood, and the project life expectancy is 90 years!

3) The last few years have seen a dramatic increase of interest in environmental issues in Arizona. Opposition to this misuse of funds is widespread. If flood control is necessary, we want an environmentally sensitive alternative.

PLEASE SPEND FLOOD CONTROL DOLLARS WISELY, WHERE THE NEED IS GREAT!

Sincerely,

Nancy Swanson

NANcy O. Swanson (Mrs. R.K.)

cc: Congressman Jon Kyl

3653 East Stanford Drive
Paradise Valley, AZ 85253
April 2, 1990

The Honorable Tom Bevill
Chairman, Subcommittee on Energy and Water Development
2362 Rayburn HOB
Washington, D.C. 20515-6020

Re: PHOENIX, ARIZONA, AND VICINITY FLOOD CONTROL PROJECT,
ARIZONA CANAL DIVERSION CHANNEL (ACDC), REACH 4

Dear Congressman Bevill:

Enclosed please find a letter which I respectfully request be submitted as testimony in hearings before the Subcommittee on Energy and Water Development, House Appropriations Committee.

Very truly yours,

Marlyne Jones
(602) 956-3613

copy to: The Honorable Jon Kyl
U.S. House of Representatives

The Honorable Robert C. Byrd
U.S. Senate

REMARKS BEFORE THE SUBCOMMITTEE ON
ENERGY AND WATER DEVELOPMENT
HOUSE APPROPRIATIONS COMMITTEE

MARLYNE JONES

APRIL 2, 1990

TESTIMONY

3653 East Stanford Drive
Paradise Valley, AZ 85253
April 2, 1990

The Honorable Tom Bevill
Chairman, Subcommittee on Energy and Water Development
U.S. House of Representatives
2362 Rayburn HOB
Washington, D.C. 20515-6020

Re: PHOENIX, ARIZONA, AND VICINITY FLOOD CONTROL PROJECT, ARIZONA CANAL DIVERSION CHANNEL (ACDC), REACH 4

Dear Congressman Bevill:

I am writing to urge your opposition to federal funding for U.S Army Corps of Engineers' construction of Reach 4 of the ACDC.

The project as authorized in 1965 included four dams and Reaches 1, 2, and 3 of the ACDC. In 1972, an east Phoenix area sustained approximately $3.8 million in flood damage due primarily to two breaks in banks of Salt River Project's (SRP's) Arizona Canal (documented in Corps' Report on Flood of 22 June 1972, and Economic Analysis, March 1987, p. 13).

The City of Phoenix requested the Maricopa County Flood Control District (MCFCD) and the U.S. Army Corps of Engineers (Corps) to extend the project. Reach 4 was added to the ACDC (in 1977), by the office of the Chief Engineer. MCFCD's latest figures show the estimated combined federal and local cost of Reach 4 is $84,675,000--making it, by far, the ACDC's most expensive feature.

MCFCD's representatives argue that a b-c analysis is just one tool used to justify federal-level interest in a project, but in reality, of limited value. The reality is taxpayers do not want Reach 4, and it is the local bureaucracy's (and SRP's) greedy grasp for the federal dollar which is strapping the concerned public to the project in its present undesired form. Given the project's b-c ratio and the enormous amount of citizen opposition, it would be right-minded to eliminate the federal money--freeing it for other federal projects enjoying more favorable economics and no opposition.

Opponents of Reach 4 claim Reach 4 was an invalid extension of the originally-authorized plan, as documented by copies of Corps memos, dated March 8, 1974, April 5, 1974, and April 28, 1975.

In fact, ACDC Reach 4 lacked full inquiry of its incremental benefits (as documented in the City of Phoenix ACDC Task Force Final Report, April 1986, p. 10) for ten years--until

March 1987, when the Corps' Economic Analysis was published (at the request of Congressman Eldon Rudd).

However, despite the fact that "the only local government or quasi-governmental interests which appears to have a risk of liability from flooding along Reach 4 is SRP" (Phx ACDC T.F., p. 27), to date, specific project benefits to SRP remain unacknowledged--a point substantiated in a recent memo written by Dan Sagramoso, Chief Engineer and General Manager of the MCFCD to Congressman Jon Kyl, dated February 28, 1990. Opponents of Reach 4 argue that taxpayers are being unfairly burdened for what is essentially SRP's problem. This position is confirmed by the fact that FEMA maps (also prepared by the Corps) show the area south of SRP's Arizona Canal to be in a 500-year flood plain.

The 1987 Economic Analysis shows that using an 8-7/8% discount rate (the rate authorized for new water projects in 1987), Reach 4's b-c ratio is 0.4 to 1. MCFCD's representatives show that using a 5-7/8% discount rate (the rate in effect when Reach 4 was added to the original project in 1976), Reach 4's b-c ratio is 0.63 to 1. Opponents of the project are not convinced there is any legal right to evaluate Reach 4 using a 3-1/4% discount rate (the rate established for projects authorized before 1969), and believe the project is legally unworthy of federal interest.

Local opposition to Reach 4 has included: The Arizona Biltmore Hotel, the Arizona Biltmore Estates Village Association, Pueblos Hermosa Homeowners, Torre Blanca Homeowners, North Central Phoenix Homeowners, the Camelback East Village Planning Committee, the Citizens Against Reach 4, the Arizona Republic newspaper, and Phoenix Magazine. In addition, opposition now includes the Desert Crest Retirement Community, many Paradise Valley residents, many users of Maricopa County's Sun Circle Trail, Paradise Valley Homeowners Association, and the Town of Paradise Valley.

On February 22, 1990, the Paradise Valley Town Council, "on behalf of residents and concerned taxpayers," approved Resolution No. 632, specifically directed to Senators John McCain, Dennis DeConcini, and Congressman Jon Kyl, asking for an investigation of Reach 4's economic justification and environmental impacts.

A final point: Reach 4 is not essential to the function of Reaches 1, 2, and 3, and, if eliminated, would increase the carrying capacity of Reaches 1, 2, and 3, and hence, their benefits (see Phoenix ACDC T.F., p. 17).

In summary, on behalf of Citizens of East Phoenix/Paradise Valley and concerned taxpayers, I urge your opposition to federal support of Reach 4 of the ACDC, and thank you for your assistance.

Very truly yours,

Marlyne Jones
(602) 956-3613

copy to: The Honorable Jon Kyl
U.S. House of Representatives

The Honorable Robert C. Byrd
U.S. Senate

April 3, 1990

The Honorable Tom Bevill
Chairman
Subcommittee on Energy and Water Development
2362 Rayburn House Office Building
Washington, D.C. 20515

RE: ARIZONA CANAL DIVERSION CHANNEL (ACDC)

Dear Congressman Bevill:

Enclosed please find a letter which I respectfully request be submitted as testimony in hearings before the Subcommittee on Energy and Water Development, House Appropriations Committee.

Sincerely,

Barbara Kramer

cc: The Honorable Jon Kyl, U.S. House of Representatives
The Honorable Linda Nadolski, Phoenix City Council

REMARKS BEFORE THE SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT HOUSE APPROPRIATIONS COMMITTEE

BARBARA KRAMER
APRIL 3, 1990
TESTIMONY

3653 East Stanford Drive
Paradise Valley, AZ 85253
March 24, 1990

The Honorable Tom Bevill
Chairman, Subcommittee on
Energy and Water Development
U.S. House of Representatives
2362 Rayburn HOB
Washington, D.C. 20515-6020

Re: Pending $51 million appropriation for
Arizona Canal Diversion Channel (ACDC), Reach 4,
Phoenix, Arizona, and Vicinity Flood Control Project

Dear Representative Bevill:

I am writing you to oppose federal funding for Reach 4 of the ACDC, a 36-ft. wide, 21 to 25-ft. deep, 4.2 mile cement ditch the U.S. Army Corps of Engineers plans to build in northeast Phoenix/Paradise Valley.

I urge you to oppose the project because serious questions have been raised regarding its legality, economic warrant, Environmental Impact Statement, and construction design.

Local opposition, which has included:

The Arizona Biltmore Hotel
The Arizona Biltmore Estates Village Association
Pueblos Hermosa Homeowners
Torre Blanca Homeowners
North Central Phoenix Homeowners
The Camelback East Village Planning Committee
The Citizens Against Reach 4
Arizona Republic newspaper
Phoenix Magazine

Now also includes many Paradise Valley residents, the Paradise Valley Homeowners Association, and the Town of Paradise Valley.

In fact, on December 7, 1989, the Paradise Valley Town Council approved a resolution directed to the Maricopa County Flood Control District and the U.S. Army Corps of Engineers voicing strong opposition to an open ditch. On February 22, 1990, the Paradise Valley Town Council, "on behalf of residents and concerned taxpayers," approved a resolution specifically directed to Senators John McCain, Dennis DeConcini, and U.S. Representative Jon Kyl, asking for an investigation of Reach 4's economic justification and environmental impacts.

The following quote is from the Arizona Canal Diversion Channel Task Force Final Report, presented to the City of Phoenix Mayor and City Council in April 1986:

> ...the only local government or quasi-governmental interests which appear to have a risk of liability from flooding along Reach 4 is the SRP or technically, the Salt River Valley Water User's Association, and the Salt River Project Agricultural Improvement and Power District (a political subdivision of the State of Arizona). The SRP has been the subject of flood damage lawsuits arising out of the operation of its canals. The ACDC would dramatically reduce the likelihood of such liability. (p. 27)

Reach 4's opponents argue that taxpayers are being unfairly burdened for what is essentially SRP's problem. Their point is confirmed by the fact that FEMA maps (also prepared by the Corps), show the area below SRP's Arizona Canal to be in a 500-year floodplain.

Despite the level of opposition within U.S. Representative Jon Kyl's district, Mr. Kyl, as of last Friday (March 23), had not reached his decision regarding whether the project should proceed. Hopefully, Congressman Kyl's representation will be fair, and not constrained by the fact that for approximately ten years preceding his election to the U.S. House of Representatives he was a member of Jennings, Strouss & Salmon, Attorneys, and represented SRP, the lawfirm's primary client.

I urge you on behalf of Paradise Valley and east Phoenix residents and taxpayers to oppose federal support for Reach 4 (thereby freeing funds for other flood control projects enjoying more favorable economics and no opposition).

Thank you for your assistance.

Very truly yours,

Marlyne Jones

Marlyne Jones
(602) 956-3613

Copies to: The Honorable Jon Kyl
U.S. House of Representatives
313 Cannon HOB
Washington, D.C. 20515-6020

The Honorable John T. Myers
U.S. House of Representatives
2372 Russell HOB
Washington, D.C. 20515-6020

The Honorable J. Bennett Johnston
U.S. Senate
132 Dirksen Building
Washington, D.C. 20510-6030

The Honorable Mark Hatfield
U.S. Senate
153 Dirksen Building
Washington, D.C. 20510-6030

April 2, 1990

The Honourable Tom Bevill
Chairman
Subcommittee on Energy and Water Development
2362 Rayburn House Office Building
Washington, D.C. 20515

RE: ARIZONA CANAL DIVERSION CHANNEL (ACDC)

Dear Congressman Bevill:

Enclosed please find a letter which I respectfully request be submitted as testimony in hearings before the Subcommittee on Energy and Water Development, House Appropriations Committee.

Sincerely yours,

Helen Harold

Mrs. James Treacy Harold
5729 Palo Cristi Road
Town of Paradise Valley
Arizona 85253

cc: The Honourable Jon Kyl, U.S. House of Representatives
The Honourable Linda Nadolski, Phoenix City Council
Mayor and Council of the Town of Paradise Valley

REMARKS BEFORE THE SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT HOUSE APPROPRIATIONS COMMITTEE

HELEN HAROLD
APRIL 2, 1990
TESTIMONY

April 2, 1990

The Honourable Tom Bevill
Chairman
Subcommitee on Energy and Water Development
2362 Rayburn House Office Building
Washington D.C. 20515

Dear Congressman Bevill:

I am writing to express my opposition to Reach IV of the Arizona Canal Diversion Channel. This is the four-mile section which is an afterthought to the original project - possibly an illegal one.

At present its resident-supporters are silent - if indeed there are any. The opposition is great and growing as more people learn of it. We are outraged that at a time of huge national debt such a project would even be considered. Its present cost benefit ratio is at best $2.50 spent for each $1.00 of benefit; that does not include costs of the enormous environmental damage and the detrimental effect on the lifestyle of nearby residents and users - not only for the two years or so the channel will be under construction but for the 100 years it is supposed to last as a blot on the desert landscape. Reach IV is the section of the canal most used by riders, joggers and family groups. Saturday morning there were over 200 blind people with their dogs enjoying the day and the desert.

We ask that it be halted for re-design and when the public purse is fat enough to afford marginal projects and when a non-destructive design has been achieved, then - if the need still exists - it can be constructed.

But now it is an example of the kind of federal spending that enrages taxpayers - especially when the primary beneficiary is the Salt River Project a quasi-governmental utility. If this is built it cannot be forgotten during the 100 years of its projected life - a monument to extravagant and environmentally callous elected officials at all levels.

We will be grateful for your support.

Yours sincerely,

TJ MILLER ASSOCIATES, INC.

April 2, 1990

The Honorable Tom Bevill
Chairman, Subcommittee on Energy & Water Development
U.S. House of Representatives
2362 Rayburn House Office Building
Washington, D.C. 20515-6020

RE: ARIZONA CANAL DIVERSION CHANNEL (ACDC)

Dear Congressman Bevill:

Enclosed is a letter which I respectfully request be submitted as testimony in hearings before the Subcommittee on Energy and Water Development, House Appropriations Committee.

Sincerely,

Thomas J. Miller

Thomas J. Miller

cc: The Honorable Jon Kyl, U.S. House of Representatives
The Honrable Linda Nadolski, Phoenix City Council

2525 East Arizona Biltmore Circle, Suite 138 Phoenix, Arizona 85016 602/381-0676

REMARKS BEFORE THE SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT HOUSE APPROPRIATIONS COMMITTEE

THOMAS J. MILLER

APRIL 2, 1990

TESTIMONY

MILLER ASSOCIATES, INC.

To: The Honorable Tom Bevill

Re: Arizona Canal Diversion Channell (ACDC)

The purpose of this letter is to voice in the strongest possible terms my opposition to the hideous, needless, wasteful, environmentally destructive ditch, titled REACH 4.

As President of the "Citizens Against Reach 4", I state the following views:

1. The citizens supposedly being protected by Reach 4 are completely against it. "Citizens Against Reach 4" number over 3800 citizens who signed a petition opposing the ditch. A majority of these people live south of Reach 4 or on the downstream side. I should add that I live south of the ditch as well. The project is to protect us from floods, when in reality its construction places me in a flood plain where I was not before. It has also been touted that insurance rates will go down. This is nonsense. I have been in the insurance business for 28 years, so I speak with some knowledge on the subject.

2. It is not needed, since the 1972 flood, the flood plain has been totally changed for the better by other flood control projects.

3. It is a needless expenditure of money that could be better used elsewhere. A project with a cost-benefit ratio of .47 to 1 is hardly a place to invest the government's money. Almost $100,000,000 is to be spent to protect against a flood that happened 18 years ago, and caused damage of $4,500,000. No deaths, no injuries. In fact, no one had to leave their homes.

4. As a citizen and taxpayer, I strongly resent the squandering of tax monies on such a useless project. It lacks so much merit as to be a product of power politics and a way to syphon millions of Federal dollars.

5. The Maricopa County Flood Control District refused to even consider alternative construction methods (tunneling) or routes using existing natural flow patterns. Their total lack of good faith and use of deception in these matters has been appalling.

2525 East Arizona Biltmore Circle, Suite 138 Phoenix, Arizona 85016 602/381-0676

In summary, the citizens and taxpayers as well as the local media have been opposed to Reach 4 from the beginning, and continue to be opposed to Reach 4. The only ones for it have been certain politicians, as well as governmental agencies (i.e. The Corps of Engineers and The Maricopa County Flood Control District) whose livelihood depend upon such projects.

I am grateful for the opportunity to express the views of myself and my organization. I do hope you will consider these views in your decision on Reach 4.

Sincerely,

Thomas J Miller

Thomas J. Miller
President, Citizens Against Reach 4

CDM

*environmental engineers, scientists
planners, & management consultants*

CAMP DRESSER & McKEE INC.

Biltmore Commerce Center
3200 E. Camelback Road
Suite 110
Phoenix, Arizona 85018
602 956-0066

March 26, 1990

Mr. John L. Baudek
Town Manager
Town of Paradise Valley
Paradise Valley, AZ 85253

Subject: Design and Cost Analysis Study
For The Arizona Canal Diversion Study

Dear Mr. Baudek:

Enclosed for your review is a final copy of the referenced study revised to reflect meeting comments of March 20, 1990. In addition, we have reviewed the Flood Control District's comments in their letter of March 21, 1990, and offer the following:

- CDM's review did include the Corps' report entitled "Arizona Canal Diversion Channel Enhancements at Street Crossings", dated December 1988. The increased percentages of wall reinforcing and concrete referenced in the FDC letter were based on nine locations considered in the Corps' study. Five of the nine locations were channel sections reaching widths of 60 feet. The percentage increases called out (25% more concrete and 108% more steel) appeared to be extremely conservative when considering Paradise Valley's 40-foot channel section. The ultimate load factor (1.9) and allowable reinforcing steel yield stress (48,000 psi for ASTM Grade 60 steel) used by the Corps for this study also reflected this conservatism.

  CDM therefore performed cursory structural calculations to check strength requirements for a 40-foot channel. Calculations were based on ACI 318-89 ultimate strength design with an ultimate strength factor of 1.7 and reinforcing yield strength of 60,000 psi. All of the Corps' external loads from their report were used. The results of these cursory calculations showed a slight increase of reinforcing steel is required with no dimensional change in concrete sections. Our study has been revised to reflect this information. *Please remember, however, that detailed design was not included in the scope of CDM's study.*

- Comment No. 2 in the FCD's letter addresses institutional aspects of project funding. These considerations are outside the scope of our study.

Thank you for this opportunity to serve the Town of Paradise Valley. Please call if you have questions or comments.

Sincerely,

CAMP DRESSER & McKEE

K A Tanner

K. A. Tanner, P.E.
Principal, Office Manager

Attachment

KAT:sc

CDM
environmental engineers, scientists
planners, & management consultants

CAMP DRESSER & McKEE INC.

Biltmore Commerce Center
3200 E. Camelback Road
Suite 110
Phoenix, Arizona 85018
602 956-0666

March 26, 1990

Mr. John L. Baudek
Town Manager
Town of Paradise Valley
Paradise Valley, AZ 85253

Subject: Design and Cost Analysis Study
For The Arizona Canal Diversion Channel (ACDC)

Dear Mr. Baudek:

This letter report presents the findings of our Design and Cost Analysis Study for the Arizona Canal Diversion Channel through the Town of Paradise Valley.

1.0 PURPOSE

The purpose of this study is to review and compare design concepts and construction costs for Reach 4 of the ACDC within Town's limits. This includes only that portion of Reach 4 lying east of 32nd Street.

2.0 SCOPE

The scope of this study included:

- Review of the documents, data, information, and estimates shown in the list of references attached to this letter.
- Contact and discussion with representatives of the Town of Paradise Valley, Maricopa County Flood Control District (FCD), U.S. Army Corps of Engineers (Corps), The Tanner Companies and H. M. Elliott, P.E.

- Comparison of the various ACDC design concepts and construction cost estimates described in the reference documents.
- Conceptual evaluation of other designs identified by CDM.
- Preparation of a letter report summarizing the findings.

3.0 DESIGN CONCEPTS

The following design concepts were considered in the course of this study. Review of the Corps of Engineers designs was limited to the portion of Reach 4 in Paradise Valley.

1. **Open channel by the Corps of Engineers.** Open channel is a concrete rectangular cross section open at the top with cast-in-place floor and walls. Walls are "L" shape, designed to meet retaining wall criteria. See Figure 1.

2. **Covered channel by the Corps of Engineers.** Covered channel is a closed rectangular cross-section designed as a concrete box culvert of cast-in-place construction. See Figure 2.

3. **Deep tunnels by CRSS, Inc.** Tunnel design concepts include a single horseshoe-shaped cross-section constructed with drill and blast methods of excavation, and a double tunnel cross-section constructed with a tunnel boring machine (TBM).

4. **Deep tunnel by H. M. Elliott.** Tunnel design is a single large bore cross-section constructed with a TBM.

5. **Covered channel by The Tanner Companies.** This concept addresses covering a rectangular channel cross-section with voided concrete slabs of precast prestressed construction. Detailed wall and floor designs for this cover type were not included in the work prepared by The Tanner Companies.

6. **Other design concepts by CDM.** Two additional covered channel configurations were considered. Each involved supporting the roof slab at mid-span; the first concept using a longitudinal wall, and the second using a longitudinal system of beams and columns.

4.0 GENERAL CONSIDERATIONS

Corps of Engineers' documents were reviewed first to identify basic design requirements which must be met by all ACDC concepts. Key design criteria are as follows:

- **Service Life**. The project life of ACDC Reach 4 is 90 years.
- **Hydraulic Requirements**. The ACDC is designed to carry a 100-year flood, a flood event which has a one-percent probability of being equaled or exceeded in any one year. Flows from Cudia City Wash, as well as flows from smaller washes and drainage areas to the west must be handled by Reach 4 of the ACDC project. The 100-year floodflows used in establishing the channel's hydraulic design capacity at various points were derived in a thorough hydrologic study. The background hydrology has been independently checked and confirmed in five separate studies performed by the Corps, FCD and outside consultants.
- **Structural Requirements.** The ACDC structure is designed to support combinations of earth loads and live loads (where appropriate) for two conditions, the channel empty and the channel full. The structure will also support temporary surcharge loadings due to construction equipment. In addition, the structural design accommodates side drain inlet structures.
- **Operation and Maintenance (O&M) Requirements.** The ACDC structure is designed to allow periodic inspections, removal of sediment and debris, and repair of eroded areas or damages to structures. Due to the size and length of the project, the ACDC design allows maintenance and inspection of channel interiors with vehicular equipment.

5.0 DISCUSSION OF DESIGN CONCEPT FINDINGS

1. **Open and Covered Channel by Corps of Engineers.** Review of the Corps approach to design of the channel revealed few points of question. The design obviously complies with requirements listed previously in Section 4.0 of this report, and the hydraulic parameters and structural loadings used for design are based on sound engineering judgement. However, conversations were held with the Corps to clarify the following aspects of their design approach for covered channel sections.
    - **Single-barrel culvert.** The covered channel is single-barrel design with an interior clear span of 36 feet (see Figure 2). A clear span of this length requires heavy walls and roof slab. The Corps indicated that the clear span was necessary for channel hydraulics. Little invert slope is available, with a final design grade of 0.0008 (less than one-inch

drop per 100 feet of channel length). Any interior roof support in the channel creates additional hydraulic losses which cannot be tolerated in passing the design floodflow.

- **Box-culvert structural analysis.** Covered channel sections were analyzed as box culverts, with each corner of the box designed to withstand bending stresses from exterior loads. Again, this approach results in heavy walls and reinforcing, particularly with a channel clear span of 36 feet. The Corps indicated this approach was proven by traditional use in Corps projects and, more importantly, provides protection from unplanned or unexpected events. These events could include:
  - excavation adjacent to the channel removing the lateral soil pressure which helps support the walls when the channel is full; and
  - a flood event exceeding the design flood which could cause the covered channel to flow completely full with a surcharged or internally pressurized condition.

The Corps indicated the box could have possibly been designed with the bottom corners analyzed as pinned connections (not designed for bending stress). This may have resulted in some economy of materials, but may or may not have resulted in lower construction bids.

CDM's review confirms the Corps statements. Additional hydraulic losses would occur with any interior support for the roof slab, particularly with a beam and column system which would collect debris. Structurally, the Corps covered channel sections will support combinations of external loading conditions and some internal pressure. The condition causing internal pressure would result from flow in excess of the capacity of the open channel. The open-channel design appears to allow overflow from the ACDC to the Arizona Canal when the water level is less than two feet above the channel walls. With inlet hydraulic losses to the covered channel, the maximum internal pressurization is limited.

In overview, the Corps' design approach results in the following:

- The ACDC is designed using common materials and construction techniques which promotes competitive bidding. Many local contractors are capable of building this type of structure.
- The heavy structural sections resulting from the covered channel design approach yield a structure that will withstand certain unexpected external loadings and some internal pressure.

- The channel clear spans compliment operation and maintenance, with ease of access, inspection, cleaning and repair.

Regarding costs, the Corps design seems to have achieved an economy of scale. Upon our first review, some unit prices used in the Corps' construction cost estimates seemed somewhat low. For example, the Corp's unit price for concrete walls is $100 per cubic yard. CDM would usually expect this unit price to be in the range of $150 per cubic yard (the CRSS Deep Tunnel Study used $180 per cubic yard). However, the unit prices used in the Corps' estimates were borne out by the construction bids submitted in June 1989 for Reach 3. Therefore, the size of the project and materials quantities involved result in lower unit prices -- considerably lower than prices typically bid on public works projects.

2. **Deep tunnels by CRSS, Inc. and H. M. Elliott.** CRSS evaluated a single drilled and blasted horseshoe-shaped 32-foot wide tunnel and twin 24-foot diameter tunnels constructed with a tunnel boring machine (TBM). Mr. H. M. Elliott proposed a single 36-foot diameter tunnel constructed with a TBM. Based on CDM's review, tunneling is an undesirable design concept for the ACDC in Paradise Valley. Major problems with the tunneling concept are discussed below.

- A considerable amount of additional engineering work is still necessary to prepare the final design and construction documents for tunneling. As reported by CRSS, engineering costs for this work will run in the millions of dollars.

- Tunnel design will significantly impact the project schedule. Reach 4 is set to advertise for bid July 1990, with bid opening and award in October 1990. Changing to a tunneling design concept will delay the project more than one year. This delay results in increased project administration costs and increased construction costs due to inflation.

- Drill and blast tunnel excavation methods are undesirable in residential areas where homes are directly adjacent to the construction site.

- Construction costs for mechanical tunneling are greatly influenced by availability of the tunneling equipment required. The CRSS and Elliott studies each assumed the type of TBM required would be available for the work within a reasonable time. This may not be possible for this kind of specialty equipment.

- The type of tunneling equipment needed is dependent upon the subsurface material to be excavated. A preliminary look at the soils information indicates there are changes in the subsurface materials along the alignment which would potentially require different machines.

This could greatly increase costs due to the large mobilization costs for each different machine brought in. (CRSS study estimates $500,000 for each mobilization).

- Dewatering, if required, may be one of the most costly factors in tunneling. The FCD has indicated well drilling logs in the area show a possible problem with groundwater east of 32nd Street, which was not considered in any previous cost estimates.

- Construction of a tunnel also inhibits competitive bidding. The number of contractors who could bid a tunnel project would be limited compared to those who could bid a channel or box culvert. A single large tunnel boring machine operation would further limit the potential contractors.

- Having a deep tunnel as a part of the ACDC potentially increases the liability associated with the project. The deep shaft inlet and outlet would require extra safety devices to protect public and maintenance workers from the openings while at the same time allowing free passage of water. Operation of the tunnel either full or empty would not greatly affect the liability.

- The tunnel would also present operation and maintenance problems and costs not associated with open channel or box culvert. The proposed vehicular inspection and maintenance concept for the ACDC would not be directly applicable to the tunnel portion. Vehicles would have to be lowered into the tunnel with permanent or temporary cranes. Maintenance workers in the tunnel would have to comply with OSHA requirements for working in a confined space (air packs or temporary ventilation). In addition, the tunnel requires operation costs for pumping the water out 16 times per year if it is to be operated dry, or a chlorination and recirculation system if it is to be operated wet. Both capital and operations costs presented by CRSS for either dry or wet operation appear to be somewhat low. CDM estimates capital costs for either pumping or chlorination/recirculation facilities to be in the range of $200,000 to $400,000, with annual operating costs of nearly $70,000 to $90,000. Annual operating costs would increase with increasing energy costs.

- Wet operation of the tunnel may be in conflict with the revised Clean Water Act and its resulting regulations for storm water discharges. The discharge from the chlorinated tunnel may not meet the permit requirements to be imposed by the State or EPA.

The costs presented by CRSS indicate tunneling is about 50% more expensive than the Corps' open cut approach. The costs presented by Mr. Elliott were much lower (only 3% to 9% more for tunneling than the Corps' design), but still indicate additional expense in the millions of dollars.

3. **Covered channel by The Tanner Companies and other concepts by CDM.** As mentioned previously, use of mid-span support for the covered channel roof is discouraged by hydraulic and O&M considerations. A cursory check of the hydraulics by CDM indicated the 100-year floodflow could not be accommodated when a center wall is added to the Corps' covered channel. Enlarging the channel to again accommodate the flow will not result in the desired economy. Therefore, the two concepts initially considered by CDM were dismissed. Only the channel cover concept by Tanner was considered further.

The type of precast prestressed cover proposed by The Tanner Companies will span the channel without intermediate supports. It is therefore compatible with the Corps hydraulic requirements for passing the design flow and meets the O&M considerations. There are two areas this approach is not comparable to the Corps' design.

- Prestressed slabs are available only from specialty suppliers which may somewhat inhibit competitive bidding.
- The precast prestressed cover appears to be capable of meeting the Corps' external roof loading criteria, but may not perform as well as the box culvert under unexpected or unusual loads. The prestressed roof may be at risk if the covered channel becomes internally pressurized. However, attaining sufficient internal pressurization to cause damage is unlikely. As stated previously, overflow of flood waters to the Arizona Canal appears to occur when the water level is less than two feet above the ACDC channel walls. Internal pressure is of concern only because the standard prestressed slabs are not designed for the upward load from internal pressure and the slab connection at the wall is not usually designed for uplift. Detailed design would be necessary to confirm that pressurization of the channel is not a problem, which was not included in Tanner's assumptions and costs.

Wall design was also not included in the Tanner information for a prestressed cover. Detailed structural calculations are necessary to identify the wall section required to support all external loads. CDM has completed cursory structural calculations which indicate that the Corps' open-channel wall with some additional reinforcing and a prestressed slab may be adequate as a covered channel section.

Assuming that adding a prestressed roof and 20 percent additional reinforcing to the Corps' open channel is adequate as a covered channel and the risk of internal pressure is minimal, a comparison of probable construction costs can be made for the Corps covered channel and a prestressed roof on an an open channel section.

Costs were developed for the Corps covered channel (see Figure 2) on a per linear foot basis. These costs are based on a Corps estimate, dated December 5, 1989 (see Reference 8). The per linear foot probable cost for the Corps covered channel is:

Corps Covered Channel	$/L.F.
Concrete - Invert 4.1 cy @ $ 70/cy	$ 287
Concrete - Walls 5.5 cy @ $100/cy	550
Concrete - Top 3.55 cy @ $110/cy	390
Reinforcing 2150 lb @ $0.31/lb	666
	$1,893

Costs for an open channel section with 20 percent additional reinforcing and a prestressed roof (see Figure 3) were also developed on a per linear foot basis. The open channel costs are based on the Corps December 5, 1989, estimate. The cost of the prestressed roof (voided bridge slab) is from an estimate by The Tanner Companies. The per linear foot probable cost for the Corps open channel with 20 percent additional reinforcing and a prestressed roof is:

Corps Open Channel w/Prestressed Roof	$/L.F.
Concrete - Invert 2.75 cy @ $73.50/cy (1)	$ 203
Concrete - Walls 2.25 cy @ $105/cy (1)	237
Precast Roof	432
Grout $10/ft	10
Reinforcing 890 lb @ $0.31/lb	276
	$1,158

(1) Unit prices are assumed to increase 5 percent with the reductions in concrete quantities.

Comparison of the probable costs shows about $735 per linear foot difference between the covered section types.

The Corps' present design for the ACDC in Paradise Valley results in the following costs:

Open Channel; from Cudia City Wash to beginning of covered channel at Stanford Drive	
2600 feet @ $720/ft [1]	$1,872,000
Covered Channel; beginning of covered channel at Stanford Drive to 32nd Street	
1269 feet @ $1893/ft [2]	2,402,000
	$4,274,000 [2]

[1] Using lower unit prices for concrete

[2] Channel only--does not include earth cover, fences, inlets, etc.

Using the open channel with increased reinforcing and the prestressed roof for the entire length of the ACDC in Paradise Valley (Cudia City Wash to 32nd Street) would result in a total probable cost of $4,481,000 (3869 feet @ $1,158/ft). Using this approach, the entire length of the Paradise Valley portion of Reach 4 could be covered for an additional cost of approximately $207,000. It should be noted that for comparative purposes this cost is for the channel only and does not include the earthwork or appurtenances. Cursory review indicates appurtenance costs to be a trade-off. For example, a covered channel requires inlets, but eliminates the cost of fencing. Earthwork would still be additional.

6.0 SUMMARY

The general criteria for the design of the ACDC include a facility with a 90-year service life capable of handling the 100-year flood. The facility design allows maintenance and inspection of channel interiors with vehicular equipment.

Corps Design

The approach the Corps has taken to the design of the open channel and covered sections is based on sound engineering judgement. Walls are designed for conditions of full or empty channel. The covered sections will withstand some internal pressurization; however, the potential frequency and severity of the internal pressurization has not been determined.

The fully open 36-foot wide channel is required to pass the 100-year flood with the limited slope available. Approaches which reduce the flow area with an intermediate wall or olumns will not pass the 100-year flood and are not acceptable.

The costs developed by the Corps for their design have been reviewed and are validated by recent Reach 3 bid results.

Tunnels

A tunnel concept for the ACDC in Paradise Valley is not viable. The tunnel could increase engineering and administration expense, increase construction complexity and cost, inhibit competitive bidding, increase potential liability, increase operation and maintenance complexity and cost, and cause potential storm water effluent quality problems.

Prestressed Cover

A prestressed cover seems to be a workable concept as an alternative to the Corps covered channel. Detailed design of the wall and prestressed cover system is necessary to define reinforcement, connections, etc. Preliminary evaluation of the Corps' open channel wall indicates it may be suitable as a covered channel with additional reinforcing and a prestressed slab roof. This approach results in an additional cost of approximately $207,000 for the channel structure only over the Paradise Valley portion of Reach 4 as designed. The total probable construction cost to cover all of the ACDC in Paradise Valley with this method is approximately $4,481,000 (Cudia City Wash to 32nd Street, earthwork and appurtenances not included).

There is some risk to this approach associated with possible internal pressure in the covered channel. Further work is necessary to confirm that pressurization of the channel is not a structural concern. To proceed with this approach, a detailed analysis to quantify the risk of internal pressure must be completed and a detailed structural analysis of the channel concept must be performed.

I am available at your convenience to discuss the contents of this study. Thank you for this opportunity to serve the Town of Paradise Valley.

Sincerely,

CAMP DRESSER & McKEE, INC.

K. A. Tanner

K. A. Tanner, P.E.
Principal, Office Manager

Attachments

KAT:sc

REFERENCES

1. CRSS, Inc. in association with Brierly & Lyman, Inc., SEA Consulting Engineers, Inc., Conceptual Design Report: *Arizona Canal Diversion Channel Deep Tunnel Study,* February 1989.

2. CRSS, Inc., Site Conditions Report: *Arizona Canal Diversion Channel Deep Tunnel Study,* November 1988.

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7. The Tanner Companies, T-PAC Prestress Division: "Cover for ACDC Channel Through Town of Paradise Valley," December 5, 1989.

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9. U. S. Army Corps of Engineers, Los Angeles District, Gila River Basin-- Phoenix, Arizona, and Vicinity (Including New River): Arizona Canal Diversion Channel (Cudia City Wash to Dreamy Draw, Including Cudia City Wash Sediment Basin): Drawing Sheets 14 through 20, 33, 34, 53, 54, 56, 57, 59 and 60 of 89.

10. U. S. Army Corps of Engineers, Los Angeles District, Gila River Basin--Phoenix, Arizona, and Vicinity (Including New River): *Arizona Canal Diversion Channel, (Including Cave Creek Channel and Sediment Basins on Cave Creek and Cudia City Wash),* Final, March 1985.

11. U. S. Army Corps of Engineers, Los Angeles District, Gila River Basin--Phoenix, Arizona, and Vicinity (Including New River): *Arizona Canal Diversion Channel, 40th Street to Cactus Road (Including Cudia City Wash Sediment Basin, Cave Creek Sediment Basin, and Cave Creek Channel),* Final, April 1986.

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14. U. S. Army Corps of Engineers, Los Angeles District, Gila River Basin--New River and Phoenix City Streams: *Design Memorandum No. 3, General Design* Memorandum - Phase I Plan Formulation, Main Report, March 1976.

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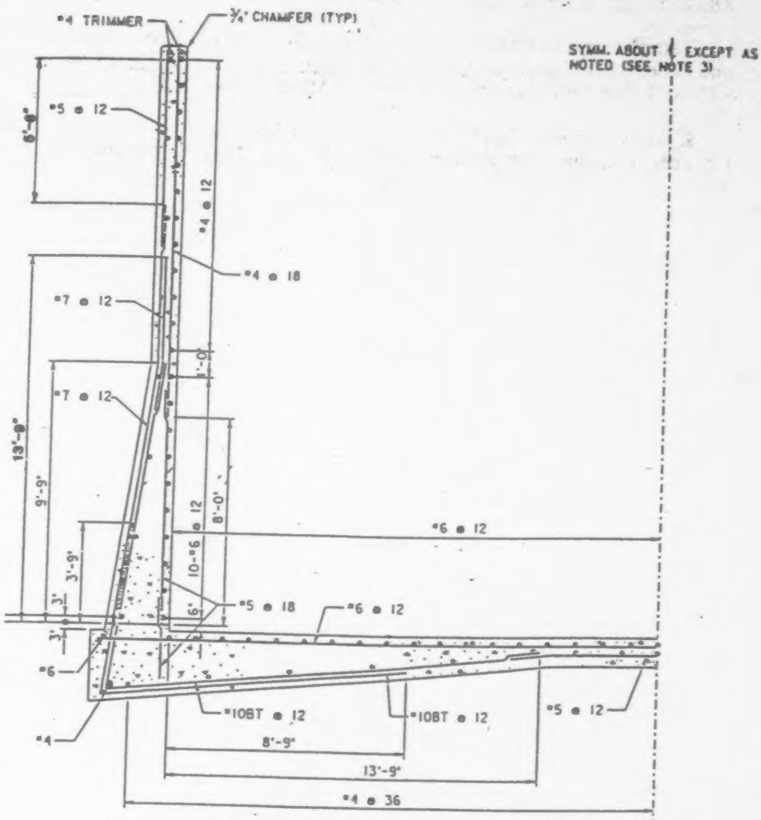

#4 TRIMMER
3/4" CHAMFER (TYP)
SYMM. ABOUT ℄ EXCEPT AS NOTED (SEE NOTE 3)
6'-6"
#5 @ 12
#4 @ 12
#4 @ 18
#7 @ 12
1'-0"
#7 @ 12
13'-9"
9'-9"
8'-0"
10-#6 @ 12
#6 @ 12
3'-9"
3'
3'
6'
#5 @ 18
#6 @ 12
#6
#4
#10BT @ 12
#10BT @ 12
#5 @ 12
8'-9"
13'-9"
#4 @ 36

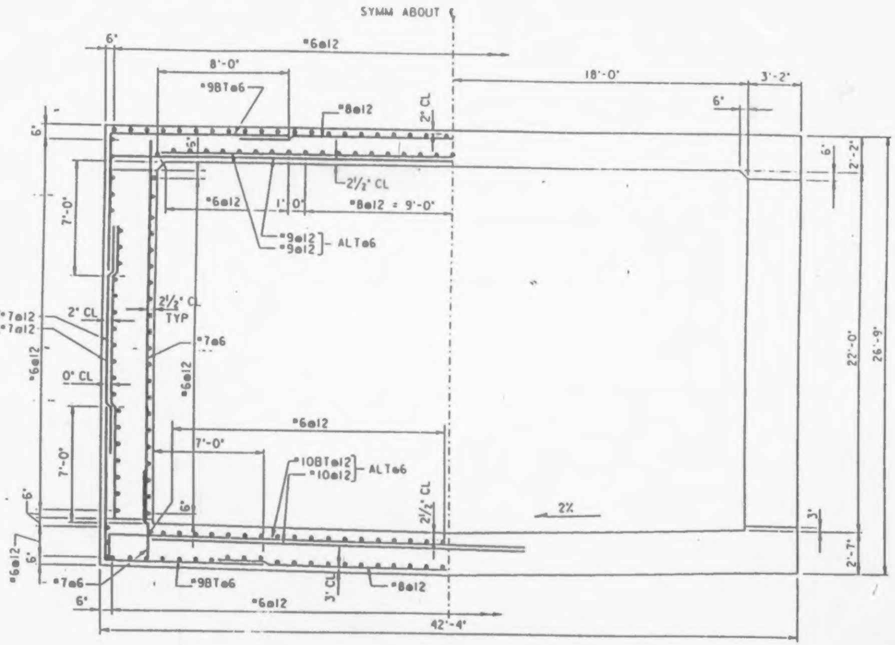
CHANNEL SECTION NO. 4

SCALE 3/8 IN = 1 FT

FIGURE NO. 1

CORPS OF ENGINEERS
OPEN CHANNEL

CDM


SYMM ABOUT ℄
6'
#6@12
8'-0"
#9BT@6
#8@12
2" CL
18'-0"
3'-2"
6"
6"
2'-2"
2½" CL
#6@12
1'-0"
#8@12 = 9'-0"
#9@12
#9@12
ALT@6
7'-0"
AT T.@6
#7@12
#7@12
2" CL
2½" CL TYP
#7@6
#6@12
#6@12
0" CL
#6@12
7'-0"
7'-0"
#10BT@12
#10@12
ALT@6
2½" CL
2%
22'-0"
26'-9"
6"
6"
3"
2'-7"
#6@12
6"
#7@6
#9BT@6
3" CL
#8@12
6'
#6@12
42'-4"

COVERED CHANNEL SECTION NO. 10

STA. 963+49.07 TO 975+51.70

SCALE: ¼ IN = 1 FT

FIGURE NO. 2

CORPS OF ENGINEERS
COVERED CHANNEL

CDM
environmental engineers, scientists, planners, & management consultants

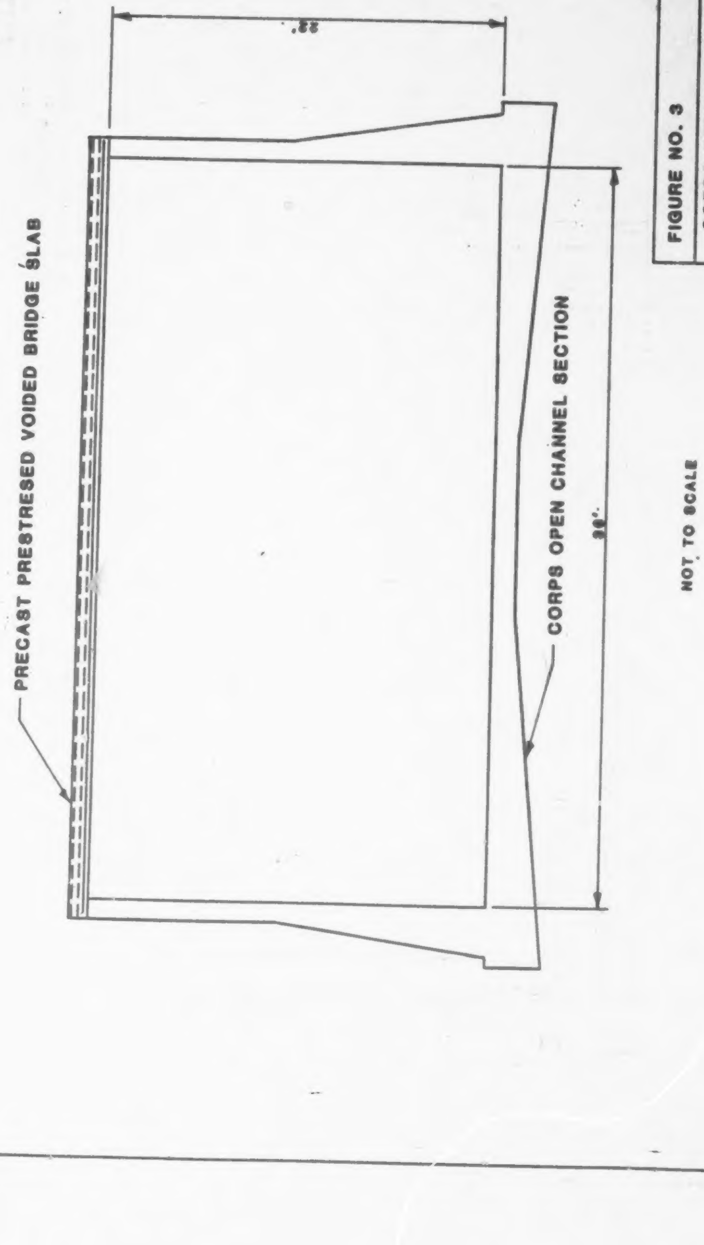

PRECAST PRESTRESED VOIDED BRIDGE SLAB
22'
CORPS OPEN CHANNEL SECTION
36'
NOT TO SCALE

FIGURE NO. 3

CORPS OPEN CHANNEL WITH PRECAST ROOF

CDM

REMARKS BEFORE THE SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

HOUSE APPROPRIATIONS COMMITTEE

ROBERT E. JONES, JR.

APRIL 3, 1990

TESTIMONY

LAW OFFICES
NAPIER & JONES, P.C.
3002 NORTH 3RD STREET
PHOENIX, ARIZONA 85012

ROBERT E. JONES, JR.
MICHAEL NAPIER

AREA CODE 602
TELEPHONE 248-9107

April 3, 1990

The Honorable Tom Bevill, Chairman
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
U.S. House of Representatives
2362 Rayburn HOB
Washington, D.C. 20515-6020

Re: Appropriation for ARIZONA CANAL DIVERSION CHANNEL (A.C.D.C.), Reach 4
Phoenix and Vicinity (Including New River) Flood Control Project

Dear Congressman Bevill:

Enclosed please find a letter which I respectfully request be submitted as testimony in hearings before the Subcommittee on Energy and Water Development, House Appropriations Committee.

Very truly yours,

Robert E. Jones, Jr.

REJ:jb

Enclosure

LAW OFFICES
NAPIER & JONES, P.C.
3002 NORTH 3RD STREET
PHOENIX, ARIZONA 85012

ROBERT E. JONES, JR
MICHAEL NAPIER

AREA CODE 602
TELEPHONE 248-8107

April 3, 1990

The Honorable Tom Bevill, Chairman
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
U.S. House of Representatives
2362 Rayburn HOB
Washington, D.C. 20515-6020

Re: Appropriation for ARIZONA CANAL DIVERSION CHANNEL (A.C.D.C.), Reach 4
Phoenix and Vicinity (Including New River) Flood Control Project

Dear Congressman Bevill:

Your committee now has before it a request to appropriate in excess of $51 million dollars for the above-referred Project. As a taxpayer and as a resident in the vicinity of the proposed Project, I encourage you to deny this appropriation request for the following reasons:

1. The principal beneficiary of this Project is not the public, but is the Salt River Valley Water User's Association and the Salt River Project Agricultural Improvement and Power District, who have the only risk of liability from flooding along Reach 4, due to their antiquated system of canals which interferes with the normal flood plains.

2. The only flood damage on record along the 4.2 miles encompassing Reach 4 has been less than $4 million dollars. This damage was directly attributable to the failure of Salt River Project's canals, and likely would not have occurred had the canals not acted as a dike across the normal flood plain.

3. The true opposition by the taxpayers to this project has never been fully voiced by either of Arizona's U.S. Senators, Dennis DeConcini and John McCain, or Representative Jon Kyl, which is doubtless due to the influence from special interests. Common Cause released a finding on March 16, 1990 that Senator McCain received more than $132,450.00 from energy PACs. Congressman Kyl, prior to becoming elected, was a lawyer in Phoenix in charge of lobbying activities on behalf of Salt River Project, and according to Common Cause received $25,000.00 from energy PACs since his election.

The Honorable Tom Bevill, Chairman
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
April 3, 1990
Page Two

A notable and long-time resident in the area, former U.S. Senator Barry Goldwater, expressed his views of the Project in his November 13, 1989 letter to the Mayor of the Town of Paradise Valley, a copy of which is attached hereto. Senator Goldwater's description of Reach 4 as the "worst boondoggle I've ever seen" could not be more eloquently put.

The expenditure of $51 million for this Project is totally irresponsible in view of the current federal deficit, as well as the many federal programs that benefit the public, which are being cut or eliminated. Your Committee should send a message to Arizona that the days of special interest legislation and protection have passed. The beneficiaries of this project should be made to realistically decide its economic warrant by having to shoulder the entire cost.

Very truly yours,

Robert E. Jones, Jr.

REJ:jb

Barry Goldwater
P. O. BOX 1601
SCOTTSDALE, ARIZONA 85252

November 13, 1989

The Honorable Robert Plenge
Mayor of Paradise Valley
6401 E. Lincoln Dr.
Paradise Valley, AZ 85253

Dear Mayor Plenge:

The matter of the so-called canal, to be built on the north side of the Arizona Canal, has come to my attention in a much more vivid way than I had thought possible.

I have spent my entire life in this valley. I have seen the Salt River in high flood. I've lived through every manner of rain storm, but never have I known of any event that would call for the expenditure of any money for a canal to take care of water, supposedly falling outside the Arizona Canal, and causing trouble.

I do not know who started all this, but I intend to devote full time to putting a stop to this useless, waste of money, and I sincerely hope that the governing bodies of Paradise Valley, and other affected communities will join hands. This is the worst boondoggle I've ever seen, and as a tax payer, and as a citizen, I'm not going to sit by and take it.

Sincerely,

Barry

Barry Goldwater

copy: Ms. Marlene Jones
3653 E. Stanford Dr.
Phoenix, AZ 85018

Charles W. Murphy
Chairman
Standing Rock Sioux Tribe
Fort Yates, North Dakota 58538

April 4, 1990

The Honorable Tom Bevill, Chairman
Committee on Energy and Water Development
2302 Rayburn House Office Building
Washington, D.C. 20510

Attention: Dave Gwaltney

Dear Chairman Bevill:

Enclosed please find my written statement supporting the budget proposal of the State of North Dakota and the Standing Rock Sioux, Devils Lake Sioux and Fort Berthold Tribes, for the Garrison Diversion Unit in Fiscal Year 1991. I am hoping that this statement can be included in the record of outside testimony which your Committee is developing, the weeks beginning March 26 and April 2, 1990.

As my enclosed statement suggests, our Tribe's projects under Garrison are an important part of our human and economic development. These projects also represent a first step toward overcoming the impact of losing our valuable Missouri River bottomlands, for the Oahe Dam and Reservoir Project. I very much appreciate your continued support for Garrison funding.

Sincerely,

Charles W. Murphy, Chairman
Standing Rock Sioux Tribe

Enclosure

Charles W. Murphy
Chairman
Standing Rock Sioux Tribe
Fort Yates, North Dakota 58538

April 4, 1990

The Honorable J. Bennett Johnston, Chairman
Appropriations Subcommittee on Energy and
Water Development
132 Dirksen Senate Office Building
Washington, D.C. 20510

Attention: Proctor Jones

Dear Chairman Johnston:

Enclosed please find my written statement supporting the budget proposal of the State of North Dakota and the Standing Rock Sioux, Devils Lake Sioux and Fort Berthold Tribes, for the Garrison Diversion Unit in Fiscal Year 1991. I am hoping that this statement can be included in the record of outside testimony which your Committee is developing, the weeks beginning March 26 and April 2, 1990.

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Sincerely,

Charles W. Murphy, Chairman
Standing Rock Sioux Tribe

Enclosure

STATEMENT OF CHARLES MURPHY, CHAIRMAN - STANDING ROCK SIOUX TRIBE

Mr. Chairman and distinguished Committee members, my name is Charles W. Murphy. I present this testimony to support the state-Tribal proposal for the Fiscal Year 1991 budget for the Garrison Diversion Unit. Congress reformulated this project in Public Law 99-294, to fulfill the federal government's promise of assistance with water development, in return for the taking of our Missouri River bottomlands for the Pick-Sloan program. The fulfillment of that promise is very important to the Indian and non-Indian communities of North Dakota. Toward that end, we are asking that Congress provide $45 million for Garrison in FY 91. Of that figure, $5-8 million can be set aside for Indian municipal, rural and industrial (MR & I) water service for three North Dakota reservations and $2 million for Standing Rock irrigation.

INTRODUCTION

I serve as Chairman of the Standing Rock Sioux Tribe, the fourth largest Tribe of the Great Sioux Nation. We reside on the Standing Rock Indian Reservation in central North and South Dakota.

Traditionally, we established our camps and communities along the Missouri River's bottomlands. This wooded, fertile environment contained adequate groundwater for wells and stockwatering, and easy access to the Missouri River. Unfortunately, this land was needed for the Oahe Dam and reservoir project. Congress acquired our valuable bottomlands in Public Law 85-915, and they were inundated by Lake Oahe within three years.

As a result, our traditional communities and way of life have been uprooted. Our Indian communities were forced to move onto the hills and plateaus west of the river, popularly known as the "Missouri breaks." The groundwater is largely inaccessible and of very poor quality. Although the soils are rich, irrigation pumps and pivots are needed for agriculture. Mr. Chairman and distinguished Committee members, our water projects under Garrison are very important to the Standing Rock Sioux Tribe. These projects help overcome the devastating impact of the inundation of our bottomlands on the people of Standing Rock.

The Tribe has entered into contracts with the U.S. Bureau of Reclamation, authorized by Public Law 93-638 as amended, to plan, design and construct the MR & I and irrigation systems authorized for our Reservation in P.L. 99-294. We are currently designing our MR & I system and completing the planning for our irrigation project. Construction will be underway for both projects in FY 1991. We will be able to expend considerably more money and make more tangible progress than in past years. We are hoping to obtain $2 million for MR & I and $2 million for irrigation development in FY 1991. This represents an equitable allocation for Standing Rock, from an overall Garrison budget of $45 million in FY 1991.

MR & I WATER SERVICE

The availability of a plentiful and high quality water supply is vital to the survival of North Dakota's Reservation Indians. The Garrison Reformulation Act of 1986 provides specifically for MR & I on the Standing Rock, Fort Berthold and Devil's Lake Indian Reservations. The Act authorized $20.5 million for Indian MR & I, of which Standing Rock's share is $8 million, by agreement of the parties.

We will have expended approximately half of our $8 million MR & I authorization by the end of the current fiscal year, or shortly thereafter. We have studied our rural water needs, and planned an MR & I system to serve every community and range unit, Indian and non-Indian, on our Reservation. We have prioritized our rural water needs and identified a single component of the Reservation-wide system, which we shall construct with funds provided under the existing authorization.

This component consists of pipelines from the existing public water system in Fort Yates, North Dakota, which includes a modern water treatment plant and utilizes the Oahe Reservoir as its source, to the rural communities of Porcupine and Cannon Ball.

These communities curently depend on deep groundwater, as the source for their public water supplies. This supply is not dependable, causing frequent interruptions in service. Of greater concern, though, is the water quality. The groundwater is highly mineralized, and contains iron, manganese and bacteria. The water quality in Cannon Ball is particularly bad. In December, 1986, the U.S. Public Health Service issued a warning to the local Women, Infants and Children (WIC) office, advising that water from the Cannon Ball public water system should not be provided to infants.

The project component to be constructed under the existing authorization also includes secondary distribution pipelines to rural homesites. Most residents now depend on poorly constructed or low capacity individual wells, or have water hauled to underground cisterns. These sources are often contaminated with bacteria, undesirable minerals and in some cases inorganic chemicals, and are costly to maintain. Many rural residents on the Standing Rock Indian Reservation have no running water, at all.

Funds provided for the current fiscal year are enabling the Tribe to design and construct the main water lines from Fort

Yates to Cannon Ball and Porcupine, this year. The Tribe has determined that $2 million is needed in FY 1991, to provide MR & I water service to the rural homesites described above.

In sum, the Tribe has planned an MR & I water system for the entire Standing Rock Indian Reservation, to serve all water users, Indian and non-Indian. We have incorporated existing facilities into this system, as the most cost effective manner to meet the severe rural water needs of our people. As the funds to be provided under the existing authorization are inadequate to meet our needs, we are designing but one component of the Reservation-wide system that we developed. This component includes rural water service to two communities with inadequate public water systems, and to rural residents in those districts. Funds currently available are being used for the main pipelines to these communities. The Tribe will need $2 million in FY 91 to construct secondary pipelines, for water service to rural residents, many of whom now haul drinking water great distances, at considerable expense. Ultimately, the Tribe will need an additional authorization of funds, as anticipated by the authors of the Garrison Reformulation Act, to construct the Reservation-wide system that we have planned. Our research indicates that we will need an authorization of $80 million, to serve every Reservation resident with clean, potable water.

IRRIGATION DEVELOPMENT

In P.L. 99-294, Congress authorized funds for irrigation development on 2,380 acres on the Standing Rock Indian Reservation. The Tribe chartered the Standing Rock Farm, Inc. in 1983, and we currently irrigate approximately 1,400 acres. We see our irrigation development under Garrison as very important to the continued success of our agricultural enterprise at Standing Rock. In addition, our irrigation projects enable the Tribe to exercise it's valuable water rights, which we depend on for human and economic development on the Standing Rock Indian Reservation.

At present, we are in the planning stages of developing irrigation along the Grand River. The Grand is a major tributary to the Missouri, and runs through the southern portion of our Reservation.

Our planning has required extremely technical investigations of water quality and soils. Although the Grand River is a resource held in trust by the United States for the benefit of the Tribe, there has been considerable upstream development which adversely affects the water quality and streamflows on the Reservation. Surface evaporation at the U.S. Army Corps of Engineers' Bowman-Haley Dam and the U.S. Bureau of Reclamation's Shadehill Dam, and the runoff from strip-mining has affected water quality in the Grand. Reclamation's Shadehill project, upstream and directly to the west of our Reservation boundary, is operated with inadequate attention being given to our irrigation water and in-stream needs.

We are currently investigating and discussing these issues with the Bureau of Reclamation. In FY 90, we will resolve the planning issues for irrigating a number of tracts, ranging from 50 to 160 acres, along the Grand River. In FY 91, the Tribe will need $2 million for the design and construction of pumps and pivots for the identified units.

There are two final points that are noteworthy. First, the Garrison Reformulation Act specifically authorizes the Indian irrigation development that we are undertaking. Nevertheless, we are concerned that Garrison's non-Indian projects and the Indian MR & I program are funded at the expense of Standing Rock irrigation. To ensure that our successful irrigation development continues and the intent of Congress in reformulating Garrison is fulfilled, I am hoping that the FY 91 Garrison budget clearly delineates that funding is included for Standing Rock irrigation.

Second, the Bush administration, apparently prompted by a recent report of the Interior Department's Inspector General, seeks to eliminate funding for Garrison. Generally, huge non-Indian irrigation projects on river systems like the Missouri concern me, as they potentially use or pollute waters to which Indian Tribes have a prior and superior right. Nevertheless, Garrison as reformulated represents a viable and feasible project. It is neither too ambitious in scope to affect Tribal rights to the Missouri's waters, nor too scaled down to eliminate its positive impact on the region's economy. Ultimately, it represents compensation to non-Indian North Dakotans for the land taken for Pick-Sloan. I oppose the administration's efforts to eliminate Garrison's non-Indian irrigation project. I believe that both the state and the Tribes that lost land for Pick-Sloan should be compensated. North Dakota should obtain federal assistance for water development, and the Tribes are entitled to revenues from the sale of Pick-Sloan hydropower, and further authorizations of funding for water projects. Nevertheless, although the Leavitt Act insulates Standing Rock irrigation from the types of narrow, mechanistic attacks levied against Garrison by the Inspector General, let me state for the record my support for Garrison's completion.

Toward that end, I respectfully request your favorable consideration of our request that $45 million be appropriated in FY 91 for the Garrison Diversion Unit, $6-8 million of which should be allocated for Indian MR & I, with $2 million for Standing Rock irrigation.

Weekly Schedule
April 2-6, 1990
Page Two

Wednesday, April 4

8:45 am	Gephardt Meeting; H-132; SUSAN B.
9:30 am	Bob Barrie, Ann Canfield, G.E.; re: UBIT; Ct: Joyce, 637-4471; ALLEN
10:00 am	BLD Testimony before Health SubC; 1100 Longworth; GREG
10:45 am	BLD Testimony before Foreign Operations Approp. SubC; H-308; Ct: Lori, 5-2041; DOUG, RAY
11:15 am	SARAH; re: schedule
11:30 am	2000/LOVE reception; 210 Cannon; STAFF ALSO INVITED
12 noon	Cong. Lancaster luncheon w/ hospital administrators; Members' Dining Room; GREG
1:00 pm	Brad Brummen, 3 4-H students; Ct: 701/237-8595; w/ photo
1:15 pm	LORI; re: "good-time"
1:30 pm	Gary Jacobsen, Allen Wolpe, re: Clean Air; GREG
1:45 pm	Sara Garland, re: UND projects; Ct: 675-2044; DOUG
2:00 pm	SUSAN B., LUCY CALAUTTI
ALSO:	HOUSE IN SESSION; HR 2015, 644, 1236
3-5 pm	Select Revenue discussion of insurance company taxation; 1129 Longworth; ALLEN
5:30 - 7:30 pm	Capitol Hill Tennis Club reception; EF-100
6:00 pm	Cherry Blossom Festival congressional reception; Cannon Caucus room

Thursday, April 5 - Susan B. in ND

8:30 am	Gephardt Meeting; H-132; SUSAN B.
9:00 am	Whip Meeting; H-324
9:30 am	Rural Health Coalition press conference; location TBA; GREG
11:00 AM	HOUSE IN SESSION; HR 2015, 644, 1236
11:30 am	Cherry Blossom Festival fashion show/ luncheon; Grand Hyatt
1:30 pm	May Marie Blackmore, UND Children's Center; re: child care, ABC bill; Ct: 701/777-3947; SUSAN O.
1:45 pm	Bob Bird, Austin Sullivan, General Mills; re: tax proposal; Ct: 737-8200; ALLEN
5:30 - 7:30 pm	ND State Society Cherry Blossom reception; 116 Club, 234 3rd Street, NE

WITNESSES

Page
Abbott, Charley 2646
Abernathy, Donald W 1189-1194, 1196
Acklie, Duane W 2228, 2237
Adams, Gary 1647
Adams, Steven 2961
Akaka, Hon. Daniel K 1251-1254, 1260
Alderson, Jack 2645
Alexander, Cong. Bill 315-321, 351
Alford, George F., Jr 190-191
Allen, Dan 2645, 2684-2691
Amack, Rex 2785-2786
American Gas Association 1944-1948
American Public Power Association 2318-2322
Anderson, Hon. Glenn, M 2337, 2416-2421
Anderson, Philip W 2308-2312
Andrews, Marvin A 1444-1445
Anthony, Hon. Beryl, Jr 251-252, 254, 382-387
Archer, Hon. Bill 1409-1412
Armstrong, Michael 2467, 2525-2527
Arzt, Leonard 2196-2202
Ash, Ed E 169
Ashcroft, Gov. John 2968
Aspin, Hon. Les 857-859
AuCoin, Hon. Les 931-946
Austin, Ben 2467, 2567-2569
Austin, Michael D 55-56
Bacon, Don 954
Bagley, Mayor Larry 2467, 2597-2602, 2645, 2678-2681
Bailey, Chan 946-954
Baker, Greg 954
Baker, Hon. Richard H 453-456
Balzano, Joseph A 1157
Banks, William A 162
Barchie, N.J., Jr 61-63
Barlow, DeWitt D. III 2273-2282
Barnard, Doug, Jr 2284-2291
Barnett, Allen 1982-1986
Barnett, Jack A 1626-1629
Barton, Hon. Joe 1834-1839
Beach, Robert F 2632-2633
Beecherl, Louis A., Jr 1128, 1130-1133
Behrhorst, Vernon 1168-1173
Beilenson, Hon. Anthony C 2337, 2434-2435, 2438-2441

	Page
Bell, Ken	962
Bennett, Hon. Charles E	593, 595, 712–716, 726, 731, 736, 759, 763, 733, 780, 785, 799, 824–827
Bennett, John	136, 156–157
Bereuter, Hon. Doug	2771–2772, 2773–2780
Berger, Sheldon	2467
Berman, Hon. Howard L	2337, 2405–2410
Bernardi, Dave	2646
Besson, Ronald	301, 322–327
Biggs, Judge Otha Lee	135, 183
Bilbray, Hon. James H	1455–1456
Bilirakis, Hon. Michael	800–801
Bishop, Ron	2856–2867, 2878
Blalock, Harold	463, 471
Blecha, James	2645, 2702, 2717–2722
Blue, Linden	1887–1894
Blum, Carl L	2467, 2570–2572
Boerger, Frank	2645, 2730–2734
Bollinger, Harvey	908–920
Bonior, David	2026–2027
Bonnett, George	1271
Boone, Col. Allen	2467, 2548–2553
Bourdon, Eric	2645, 2727–2729
Boyd, Herbert M	2300–2302
Bradley, Mayor Tom	2436–2437
Branstad, Gov. Terry E	2968
Braun, Gerald W	1949
Brazos River Authority	1159–1163
Brett, C. Everett	1852–1858
Brock, M.H.	1182–1183
Brooks, Hon. Jack	1075–1114
Broomfield, William	2026–2027
Browder, Hon. Glenn	10, 122–123
Brown, Hon. George E., Jr	2337, 2379–2381
Brown, J. Edward	2961–2967, 2972
Brown, Torrey C	1724
Bruner, James D	1461–1465
Brunt, E. E. Van, Jr	2075–2082
Bryant, Charles	2468
Bryant, Dan	1185
Bryant, Lydia	1189, 1196
Buechner, Hon. Jack	857–859, 1640–1643, 2779–2780
Buffum, Ron	1271
Bunning, Hon. Jim	511, 531–538
Burch, Leonard C	2981–2983
Burdick, Kenneth M	961
Burgess, Ralph W	1176, 1186, 1189
Burkhardt, John	1157
Buzzi, John L. Ph.D, P.E	1503–1550
Caccese, Lewis	1157
Callahan, Hon. Sonny	10, 93, 97–99
Campbell, Hon. Ben Nighthorse	1698–1701
Campbell, Hon. Tom	2443
Campbell, John	2467, 2528–2531

Page
Campbell, Thomas V ... 2182
Carey, Norval E ... 1887
Carlough, Edward J ... 2252-2260
Carney, Mike ... 954
Carper, Hon. Thomas R ... 860-863, 1982
Carr, Bob ... 2026-2027
Carr, William ... 59-60
Carruthers, Gov. Garrey ... 2974-2977
Cast, Larry D ... 2842-2843
Castle, Hon. Michael N ... 860, 864-873
Castle, Jack ... 2646
Castro, Frank G ... 1472-1481
Chamberlain, Eugene ... 2812-2813
Chapman, William C ... 382, 397, 434-437
Cheatham, Glen L., Jr ... 262
Chesser, Judy L ... 1573
Chichenoff, Sonny ... 1489
Choman, Thomas ... 2333-2336
Christiansen, Don ... 1691-1692
City of Stockton, CA ... 2634-2642
Clay, Hon. William L ... 857-859, 1910-1918
Cleary, Dr. John J ... 1650-1651
Cleaver, Rev. Emanuel ... 472, 475, 480-482
Clemens, Col. Ralph O., Jr ... 130, 22, 135
Clemens, George S ... 1876-1878
Coker, Robert E ... 363-366
Coleman, Clint ... 1949
Coleman, Dr. R. Edward ... 2067-2075
Coleman, Hon. Tom ... 2779-2780
Collins, Father T. Byron ... 1867-1870
Collins, Hon. Cardiss ... 857-859
Condit, Hon. Gary A ... 2462-2464
Conway, Gerald ... 2782
Conyers, John ... 2026-2027
Cornacchia, Steve ... 963
Cox, Hon. C. Christopher ... 2337, 2387-2388
Coyne, James K ... 3013
Creswell, Robert M ... 192
Crockett, George ... 2026-2027
Cross, Victor W ... 135
Crow, Steve ... 972, 982
Crutchfield, John ... 1188
Cummings, Robert, M.D ... 3041-3043
Curry, Daniel ... 2771, 2773, 2783-2784
Dannemeyer, Hon. William E ... 2337, 2369-2371
Davenport, Bob ... 2646
Davenport, Doug ... 2603-2605
Davis, Robert ... 2026-2027
Dawson, Robert G ... 49-50, 136, 148-149
De La Garza, Hon. E. (Kika) ... 1244-1247
Dean, Dr. Stephen O ... 1872-1875
DeLay, Hon. Tom ... 1413-1414

	Page
Demery, Philip M	2631
Deutsch, Alex	2995–2996
Dickinson, Hon. Bill	10, 93–96
Dicks, Hon. Norman D	2244–2252
Diebel, Frank H	1180
Dingell, John	2026–2027
Dodge, Dick	2646
Doherty, John	1157
Donnelly, Thomas F	874–880
Dorgan, Hon. Byron L	1204–1205, 1225–1230
Dorn, Dr. Ronald V. III	2151, 2161–2164
Dornan, Hon. Robert K	2337, 2382–2386
Dowdy, Larry D	376–378
Dozier, Phillip	135
Dozier, Richard T	135
Drayton, Alfred	2836–2840
Drummond, Jerome	30–33
Dubrow, Morgan D	2218–2223
Duffy, George E	1157
Duggan, Don	382, 397–433, 438, 442, 448
Dumdi, Ellie	954
Duncan, Danny	1189, 1194–1195
Dutton, John	10, 18–20, 135, 136, 150–151, 216–219
Dyson, Hon. Roy	1681–1690
Early, B. G	159
Echeverria, John D	2005–2011
Eckart, Hon. Dennis E	2292–2293
Edwards, Hon. Don	2337, 2339–2343
Edwards, Kenneth	2467, 2577–2583
Ellison, Roger C	135, 197–198
Ellwanger, Harold	1157
Emerson, Hon. Bill	857–859, 1044–1047
Epsy, Cong. Mike	314–315
Erdreich, Hon. Ben	10, 124–125, 2185
Evans, Clare	2836–2840
Evans, Hon. John	1114, 1116
Evans, Hon. Lane	857–859
Evans, Mayor John	1128, 1134–1135
Fairfield, Terry	2228, 2237
Farabee, David	1271
Fascell, Hon. Dante B	593, 726–730
Fassett, Gordon W	1634–1635
Fauke, Hon. Thomas	859–859
Fawell, Hon. Harris W	2142–2147
Felty, Billy J	379–381
Fields, Hon. Jack	1402–1408
Fire Thunder, Cecelia	2879–2899
Fite, Coleman	263
Flippo, Hon. Ronnie	10, 126–129
Flocks, Jean	2646, 2736–2738
Flynn, John K	2467, 2620–2622
Ford, Hon. Wendell H	577–591
Ford, William	2026–2027
Foss, Brian	2645, 2723–2726

Page

Foster, James O 262
Foster, Vincent, Jr 382
Frost, Hon. Martin 1125–1126, 1834, 1840–1844, 1851–1852
Gallo, Hon. Dean 2899–2903, 2908
Gangwish, Carl 2856, 2878
Gangwish, Rodney K 2868–2870
Garrett, Roscoe 1691, 1694–1697
Garrison, Thel 1189
George, Father William L 1867–1870
George, Randall L 181
Gibbons, Hon. Sam M 802–804
Gientke, Fred 2467
Gieringer, Wallace 251, 262, 264–265, 269–271, 286–287
Gilbert, G A 40–41
Gilliland, William P 195
Gimpel, Nolan R 2645
Ginger, Lyman V 2908–2920
Glidewell, Mayor Sue L 130–131, 135, 172
Glubber, John 2645
Goldenbaum, George C 2217
Goldhammer, Paul 1631
Goldschmidt, Neil 958–959
Goldwater, Barry 3085
Goller, Jim 972, 979, 982
Goper, Velma 135
Goss, Hon. Porter J 593, 759–762
Gotbaum, Betsy 1574–1576
Graham, Bernard W., Ph.D 2173
Graham, Garth 1386
Grandy, Hon. Fred 2779–2780
Grant, Hon. Bill 805–809
Graves, Thomas P 2012–2018
Green, Jim 1394–1401, 1418
Greer, Pat 2984–2986
Grossi, Joseph T 1495–1502, 1157 1565, 1572
Grugett, George C 301, 345, 352
Gunderson, Hon. Steve 828–833, 856–859
Guthans, R. A 10, 53
Guthrie, Bill 1, 10, 16–17
Hall, Kenneth R 1859–1867
Hal, Stephen 2467, 2492–2501
Hall, Vern 2645, 2692–2696
Hammerschmidt, Hon. John Paul 255–261, 396
Hammock, Robert L 2467, 2584–2594, 2597
Hansen, Hon. James V 1455–1456, 1702–1703, 1706
Harbin, Bannester L 201–202
Harbin, Michael P 48
Hargens, Ron 2856, 2873–2875
Harold, Mrs. James Treacy 3037–3059
Harris, Edgar S 382
Harris, Elmer B 147
Harris, Hon. Claude 10, 93, 100–103
Harrison, David C 2267–2272

Page
Harrison, James 828
Harrison, William A 1157, 1558, 1564–1565
Harrison, William H. III, Phd 38–39
Hartnet, James P 2036–2042
Harvego, Lloyd H 1048
Hastert, Hon. J. Dennis 857–859
Hayden, Channing 1347, 1371–1376
Hayden Gov. Mike 2968
Hayes, Ron 1251, 1260–1264
Hayslett, Mayor Fred 463. 471
Hefley, Hon. Joel 1735–1745
Heflin, Hon. Howell 10, 105–118
Hefner, Elroy M. 2781
Heggeman, Buz 10
Hellbush, Roger 2819–2824
Henley, Albert 2467, 2525
Henry, Paul 2026–2027
Herger, Hon. Wally 2337, 2410–2415
Hertel, Dennis 2026–2027
Hieb, Joe 1631–1632
Hill, Clair A.... 2467, 2468–2491, 2502, 2511, 2525, 2528, 2532, 2548, 2554, 2564, 2567, 2570, 2573, 2577, 2584, 2595, 2602, 2606, 2616, 2645
Hinshaw, Dr. David 1727, 1729–1734
Hinton, Bud 3031–3033
Hirt, Homer B., Jr 203
Hoagland, Hon. Peter 2779–2780, 2812
Hochbrueckner, Hon. George J 220–2222, 230
Hoge, Carson H 1164–1167
Holmes, Dr. Richard A 2067
Hopkins, Hon. Larry J 517–519
Hornsby, Phillip 203–210
Horton, Hon. Frank 1746–1747
Howe, Willaim 828, 840–855
Hubbard, Hon. Carroll, Jr 511, 566–575, 592, 593
Huckaby, Hon. Jerry 382, 388–394
Hughes, Douglas E 2803, 2811
Hughes, Hon. William J 493–503
Hughes, Lyndon 1418
Hughes, Rebecca Q 292–300
Hughes, Ryan 1418
Hughes, Stephen, E., Jr 185–187
Hunt, Gov. Guy 65–66, 136, 145–146
Hunter, Dennis 2646
Hurst, William 2468, 2623–2627
Hutton, Hon. Earl 593, 780–784
Iani, Lou 1489
Interstate Commerce on Water Policy 3014–3017
Irby, Richrd M. III 1943
Ireland, Hon. Andy 593, 731–735
Ives, Paul Lane, Jr 1157, 1560–1563
Ivey, Norman S 23–234
James, Hon. Craig 810–820
Jarvi, Erick J., Ph.D 2174

Page
Jennings, Bob H 2646
Jennings, Patricia 2151, 2165-2169
Jess, J. Michael 2787-2798
Johnson, Hon. Tim 1455-1456, 1661-1670
Johnson Paul, Major 1441-1443
Johnston, Hon. Harry 821-823
Jones, Dr. Tom 1910
Jones, Lee B 2228, 2237-2238
Jones, Marlyne 3047-3051
Jones, Renis O., Jr., AIA 182
Jones, Robert E., Jr 3081-3084
Jordan, James T 174
Jordan, Phillip W 199
Jordan, Tom B 173
Joseph, W. F., Jr 178
Judge, Joe 2467, 2511-2524
Justice, Hon. Kermit H 860, 874
Kahl, Stephen B., Ph.D 2183-2184
Kaptur, Hon. Marcy 67-72
Karp, Mayor Dave 2645, 2671-2675
Kastenmaier, Hon. Bob 857-859
Kelley, Charles D. 230-233
Kelly, Earl 1949-1956
Kemp, Franklin 2926
Kerr, Andy 3008-3012
Kilcrease, Priscilla 2185-2196
Kilday, Donald E 2803, 2804-2810
Kincaid, Susan 1870-1871, 1879
King, T. Keith, P.E 57-58
Kirkham, Don Mayor Pro Tem 1271-1275
Klass, Dr. Donald L 1986-2004
Kleczka, Hon. Gerald D 857-859
Kleinfield, Oscar 2645
Kildee, Dale 2026-2027
Klinger, William H 3024-3030
Knecht, Harry 2849-2854
Knight, F.E 1063
Knutson, Thomas 2844-2849
Kolbe, Hon. Jim 1418, 1455-1460
Kopfman, Lynn 1720-1723
Koplow, Ira 2178
Kozofsky, Linda J 220, 226-230
Kramer, Barbara 3052-3055
Kroeger, Fred V 2987-2988
Krygsman, Alexander 2645, 2702-2705
Kyl, Hon. Jon 1418, 1438-1440, 1455-1456
Lagomarsino, Hon. Robert J 2337, 2398-2404
LaHann, Thomas R., Ph.D 2176-2177
Lam, Michael 1271

	Page
Lane, Ida A	961
Langner, Robert H	2645, 2646–2656, 2661–2662, 2671, 2676, 2678, 2682, 2684, 2692, 2697, 2702, 2706, 2717, 2723, 2727, 2730, 2735, 2740
Lanning, Mayor Morris L	1242–1243
LaPlace, Aubrey J	372–375
Lassen, John	1467–1471
Laughlin, D. James	2467
Lawrence, Berdon	1387–1393
Leach, Hon. Jim	857–859
Leary, John K., Jr	1073–1074
Leath, Hon. Martin	1156
Leavitt, Frederick	2260–2266
Lee, James C., Jr	25
Lehman, Charles	1577, 1610–1611
Lehman, Hon. Richard H	2337, 2389–2397
Lehman, Hon. William	593, 773–779
Lema, Joseph E	234–239
Leslie, Henry A	179
Leslie, John T	1417
Leslie, Larry	175
Levin, Sander	2026–2027
Levine, Hon. Mel	2337, 2375–2378
Lewis, David	2083–2089
Lewis, Elizabeth B., Ph.D	3038–3040
Lewis, Hon. Jerry	1727–1728, 1735, 2337, 2363–2365, 2577
Lewis, Hon. Tom	593, 736–758
Libeu, Larry	2467, 2606–2615
Liburdi, Lillian	1565–1571
Lightfoot, Hon. Jim	857–859, 2779–2780, 2946–2950
Lindsay, Jon	1415–1416
Livingston, Mayor George	2645, 2662–2670
Lodge, Mayor Sheila	2467, 2595–2596, 2645, 2676–2677
Lofstad, Richard	220, 223–225
Lone Fight, Edward	1204, 1218–1224
Long, Patrick B	1827–1831
Loriaux, D. Lynn, MD, Ph.D	2175
Losch, Robert E	2273–2282
Lowery, Hon. Bill	2337, 2372–2374
Lummus, Ron	1189
Lunday, Donald S	51–52
Lundin, Rod	2646
Lwr MS Valley FC Association	353–356
MacFarland, Jack	1489–1494
Madden, John	1631
Madigan, Hon. Edward	857–859
Madison, Jack	954
Mallon, Larry	2645
Mann, Don	954
Mansell, Robert	382, 438–441

	Page
Manues, Jim	2645
Maricotte, Joseph B., Jr	1048-1054
Marlenee, Hon. Ron	1055-1062
Martin, Frank	1577-1609, 1611
Martin, Hon. Lynn	857-859
Massengale, Martin A	2228-2236, 2238
Mastera, James	2799-2801
Matsui, Hon. Robert T	2465-2466
Matthew, Floyd	1672, 1679
Maulhardt, Lynn E	2467, 2617-2619
Maynard, Col. Charles D	266-268
Mazzoli, Hon. Romano L	511, 547-555
McCallum, Charles A., Dr	2185-2195
McCandless, Hon. Alfred A	2337, 2347-2351
McCarron, John L., Jr	10, 44-45, 135, 210-215
McClure, Hon. James A	2042-2051
McConnell, Hon. Mitch	521-529
McCorkle, Corky	1489
McCrery, Hon. Jim	382, 395
McCrory, Robert L	2303-2307
McCullough, Tim	2467, 2602
McDonald, J. William	1618
McKay, Carl R	1231-1233
McKean, George D	2467, 2502-2510
McKee, Ron	1691
McKenzie, J.T."Tom"	130, 131-133, 135, 138-142
McKuin, Barry	262, 272
McLaughlin, William	1157
McTaggart, John, Mayor Pro Tem	2644, 2645, 2682-2683
McVay, Rocky	960
Meadows, Doug	196
Mears, Dan	1895-1901
Meinen, Robert L	2971
Melas, Nicholas J	1002-1011
Mercer, Richard	2856
Meyers, Hon. Jan	472-473, 2779-2780
Meyerson, Morton H	1834, 1844-1851
Michell, Jacques	1347, 1377-1381
Miles, Robert B	961
Millan, Edward	2646
Miller, Dale	1168, 1174-1175
Miller, Hon. George	2337, 2422-2430
Miller, Kent O	2825-2830
Miller, Robin	2825, 2836
Miller, Thomas J.	3060-2063
Mineta, Hon. Norman Y	2337, 2366-2368
Mni Wiconi	1634-1639
Moddy, Hon. Jim	857-859
Moffatt, Carolyn	2645
Mofford, Gov. Rose	1418, 1422-1437
Mollohan, Hon. Alan B	1248-1250
Montgomery, Gary	489-491
Mooney, B. H., Jr	158, 163-167
Mooney, Joseph F., Jr	357-362

Page
Moore, Ivory 1189
Morgan, Sheldon 10, 34-35, 135, 194
Morris, LTG J. W. (Ret.) 2989-2994
Morrison, Beth 492
Morrison, Bruce W 2328-2332
Morrison, Hon. Sid 946-947, 2056-2059
Mottese, Lorie 2926
Muller, Clifford C 982, 988-995
Murphy, Charles W 1235-1241
Murphy, John E 2978-2980
Murry, C. Emerson 1204
Mutz, Philip B 2973
Nadel, Herman 2926
Nadolski, Linda, Vice Mayor 1443
Nagle, Hon. Dave 857-859
Natcher, Hon. William 511-516, 520, 530, 547, 555, 576, 592
National Audubon Society 2960
Nelson, Arthur A., Jr., Ph.D 2179
Nelson, Carl 2646
Nelson, Hon. Bill 593, 765-773
Newman, Robert 1902-1909
Newman, W. K 42-43
Nichols, Offa S., Jr 1-10, 64
Nicolas, Richard 1648-1649
Nielson, Hon. Howard C 1455-1456, 1702, 1703-1705
Nipper, Jim 382
Nowak, Gerald 2467
Nowak, Raymond 2803, 2804
Obertstar, Hon. James 246-251, 857-859
Obey, Hon. David 857-859
Olin, Hon. Jim 287-292
Orr, Gov. Kay A 2968
Osann, Edward R 2950-2959
Osbourne, George 2629-2630
Ottis, Richard J 1184
Owens, Hon. Wayne 1455-1456, 1654-1656, 1691, 1692-1693
O'Connell, Mia 1482-1488
O'Connor, Scott H 3035-3037
Packard, Hon. Ron 2337, 2431-2433
Pallone, Hon. Frank, Jr 1551-1557
Palmer, Fred L., Jr 1640, 1644-1646
Palmer, R. Barry 1577, 1610-1611
Panetta, Hon. Leon 2458-2461
Papio-MO River Natural Resources Dist 2814-2818
Paravicini, Ada W 135
Parker, Tim, Jr 46-47, 155
Parsons, Earl B., Jr 36-37
Parsons, Richard 2645
Pashayan, Hon. Charles, Jr 2337, 3444-2446
Patterson, Curtis 301, 328-339
Paxton, Terry 2467, 2564-2566

Page
Peckham, Taylor 262
Pelosi, Hon. Nancy 2337, 2447-2452
Pendelton, Hadley Akins 1024-1033
Penny, Hon. Timothy J 857-859
Perkins, Hon. Carl C 511, 556-566
Petermann, Martin 2812, 2813
Peterson, Betty 1691
Peterson, Neale 472, 476-477, 486-488
Peterson, R. Max 1611-1617
Peyton, Larry G 1187
Pfeifle, Kurt 1631
Phillippart, Arvin I., M.D 2025
Pickett, Sandra, Mayor Pro Tem 1155
Pickle, Hon. J. J 1455-1456
Pierce, James A 152
Plummber, William 1418
Pope, Gerald L 2645, 2697-2701
Porter, Hon. John Edward 995-1000
Portiss, Robert W 263
Poshard, Hon. Glenn 857-859
Potter, Mike 184
Powers, Michael 2645, 2671
Presley, Jerry J. 2970
Price, Hon. David 1012
Pursell, Hon. Carl 1833, 2025-2029
Pyle, Stuart 2467
Quirk, Sherry A 2225
Rader, Nancy 2108-2141
Rahall, Hon. Nick Joe II 880-907
Rangel, Hon. Charles B 2294
Raterman, Audrey 2467
Ray, Mayor Jimmy 1012-1019
Reid, Karl 2060-2067
Rendall, Chuck 2646
Renning, George 1631, 1632
Rhea, John 1114, 1117-1118, 1128, 1138-1140
Rhodes, Hon. John J 1418, 1446-1449, 1452-1455
Rice, Jim 954
Rice, Marshall 1114, 1115-1116, 1117, 1118, 1120, 1121
Richardson, Hon. Bill 2745-2771
Richey, Van L 21-20
Richmond, Larry J 1461
Richter, Charles 1204, 1211-1217
Rickert, Marvin J 2876-2877
Rinebolt, David 2203-2210

	Page
Rodgers, Paul	2333-2336
Roeder, Donald	1276-1330
Rogers, Hon. Harold	511, 539-546, 555
Rogers, Leonard J	1957-1981
Rohrabacher, Hon. Dana	2337, 2344-2346
Romer, Hon. Roy	1619-1622
Rose, Dr. M. Richard	1746, 1748-1823
Ros-Lehtinen, Hon. Ileana	717-725
Roth, Hon. Toby	857-859
Rottsolk, James E	2313-2317
Roukema, Hon. Marge	857-859
Rowe, Dr. John	2295-2297
Rozek, Thomas M	2030-2035
Rozek, Thomas M	2025
Russell, Richard	2803, 2804
Sabisky, Edward	2252, 2260
Sabo, Hon. Martin Olay	857-859
Sagramoso, Daniel E	1461
Sanchez, Veronica	2646
Sanford, Catherine S	135
Sanford, Marion K	135
Sanquinetti, Phillip A	135, 170
Sarpalius, Hon. Bill	1271
Satterlee, George	485
Savage, Hon. Gus	1712-1719
Saxton, Hon. Jim	1157-1558
Schaefer, Gov. William Donald	1725-1726
Schaefer, Hon. Dan	1823-1827
Schafer, Richard L	2467
Schell, Alex R. III	1115, 1121, 1128, 1147-1148
Schiffman, Erica	2926
Schneider, Hon. Claudine	73-92
Schuette, Bill	2026-2027
Schwartz, Stephen I	2090-2098
Scoggins, Harold B	263, 282-285
SD Dept of Water & Natural Resources	1674-1680
Seegmiller, William E	2467, 2533-2538
Seelman, Jerry	2646
Self, Peyton	503-510
Sensenbrenner, Hon. James	857-859
Shanks, Howard R	2323-2327
Shaughnessy, Michael J	2804, 2819-2824
Shaw, Hon. Clay	593, 792-798
Shelby, Hon. Richard	10, 119-121, 143-144
Shelton, Floyd	2646

Page
Shimizu, M. Tom ... 1659
Shintaku, Roger ... 2467, 2554-2563
Shumway, Hon. Norman D ... 2337, 2352-2362
Sikorski, Hon. Gerry ... 857-859
Simmons, T.M ... 301-311
Simons, Dennis S ... 1176-1179, 1189
Sinner, George ... 1204, 1205-1210
Skaggs, Gary ... 1115, 1120-1121, 1128, 1145-1146
Skaggs, Hon. David E ... 2238-2243
Skelton, Hon. Ike ... 857-859, 2779-2780
Sklar, Scott ... 1987-1995
Slattery, Hon. Jim ... 2779-2780
Small, Walter ... 2646
Smith, C.J ... 1114, 1118, 1128, 1141-1142
Smith, Guy ... 2646
Smith, Hon. Lamar ... 1455-1456
Smith, Hon. Lawrence J ... 593, 785-791
Smith, Hon. Robert F. (Bob) ... 1024
Smith, Howard N ... 200
Smith, H.D ... 171
Smith, Tom ... 921-930
Solomon, David ... 301, 345-349
Sonderup, Lee ... 2819-2824
Sonnier, Donald ... 382, 448-451
Sottile, Antonine Lafata ... 2019-2024
Spratt, Hon. John M., Jr ... 2151, 2170
Stacy, F.F ... 2226-2227
Stallings, Hon. Richard ... 2142, 2148-2150, 2151-2160, 2170
Stangeland, Hon. Arlan ... 857-859, 2921-2925
Stensgar, Jude C ... 1064-1071
Stephens, Mayor Ray ... 1117, 1128, 1136-1137
Stevenson, Walter, Jr ... 10, 135
Steward, H. Leighton ... 2997-3007
Stoerker, Holly ... 828
Stonehocker, Jack L ... 1630
Stowell, John ... 2051-2054
Straus, Jerry C ... 3018-3022
Stromberg, Erik ... 240-245
Stroud, John ... 382, 442-447
Stump, Hon. Bob ... 1455-1456
Sulpizio, John ... 2645, 2706-2716
Sumption, William S ... 203
Swanson, Nancy O ... 3044-3047
Synar, Hon. Mike ... 251, 253
Takahashi, Patrick ... 1251, 1265-1270
Talerico, John ... 2926
Tall, Jo Ann ... 2879
Tanner, K.A., P.E ... 3064-3080
Tarman, Paul ... 1933-1941
Tarrell, John ... 2856
Tauzin, Hon. Billy ... 341-344, 1382-1385
Taylor, Jeff L ... 2467
Taylor, Mayor M.E ... 453, 457-463
Ternyik, Wilbur E ... 954-957, 965

Page
Tesar, professor Delbert 1919
Thedford, Larkin T 1181
Thomas, Chris G 135
Thomas, Hon. William M 2338, 2453-2456
Thompsom, Twyla J 2628
Thompson, Angus 1271
Thompson, Darryl 1072
Thompson, Doug 2856, 2871-2872
Thompson, Michael D 54, 176
Thomson, Charles L 262, 273-275
Thonnard, Norbert, Ph.D 2180-2181
Tiley, David 964
Torbert, Leon M., Jr 28-29, 153-154
Torricelli, Hon. Robert G 2904-2907
Traxler, Bob 2026-2027
Trinity Improvement Association 1151-1154
Trulove, Tom 972-978
Twachtmann, Dale 593-711
Udall, Hon. Morris K 1418-1421, 1438, 1446, 1461
Ulveling, Roger A 1257-1259
Umatilla Indian Reservation 1035-1039
Unsoeld, Hon. Jolene 982-987
Upton, Hon. Fred 1197-1204, 2026-2027
Vander Jagt, Guy 2026-2027
Vanderloop, James, Sr 2819-2824
Vann, James A. Jr 11-15, 188
Vannucci, Lynn 2936-2945
Vasquez, Gaddi 2467, 2573-2576, 2577
Vento Hon. Bruce F 857-859, 2740-2745
Vince, Clint A 2225
Visclosky, Hon. Peter J 1020-1023
Volk, Art 2771, 2772-2773
Volkmer, Hon. Harold L 857-859, 2779-2780
Vonnahme, Don 828, 834-839
Voth, Dr. Marcus 2099-2107
Vucanovich, Hon. Barbara 1455-1456
Wagner, David A 1347-1370
Wahlgren, Dale 2825, 2831-2835
Waihee, John 1255-1256
Wallace, Phillip 2645
Wanamaker, James E 367-371
Washington, Aubrey 1189
Watkins, David 472, 483-484
Webb, Donald 2646
Weber, Hon. Vin 857-859
Wehe, David K 1919-1924
Weinard, Bruce A 26-27, 193
Weir, Robert S 463-470, 471, 472
Weiss, Thomas M 2171-2172
Welsh, Clifford W 2787, 2802-2803
Welty, James R 1925-1932
Wheat, Hon. Alan 472, 473-475
Wheeler, David W 2299
Wheeler, Joseph G., Jr 180

	Page
White, Charles L 160160	160
White, Mayor Harry	1115, 1121–1122, 1128, 1149–1150
Whitting, M.J	2961, 2969
Wilburn, Marguerite	1652–1653
Wiley, J. B., Jr., P.E	2926–2936
Wilhoit, Douglass	2467, 2539–2547
Wilkes, Gregory C	161
Williams, Billy Ray	135, 197–198
Williams, Jack	382
Wilson, Charles W	1657
Wilson, Dave	1691
Wilson, Hon. Charles	1114, 1119–, 1123–1125
Wingfield, Susan	1331–1346
Winter, Jeff	1114, 1118, 1128, 1143–1144
Wise, Hon. Robert E., Jr	1040–1043
Wolf, Ron	2803
Wolfe, Bertram	1881–1886
Wolpe, Howard	2026–2027
Wolter, John	2642, 2646, 2739–2740
Wood, Alan J	1157
Wood, Mayor Lee J	177
Woodell, Robert L	965–971
Woodman, Arthur T	262, 276–281
Workman, Boyd	1691
Wright, Al	980–981
Wright, Bob	2646
Yannitel, David M.	1879–1880
Young, Hon. C. W. Bill	593, 736, 763–764
Youngwirth, Sam	263
Zedalis, Patricia	1565, 1572
Zemp, Brian L.	3034
Zimmerman, Gerald R.	1708–1711